

**DRAFT FINDING OF NO SIGNIFICANT IMPACT (FNSI)**  
**U.S. Army Intelligence Center Future Development Planning**  
**Fort Huachuca, Arizona**  
**November 2004**

**Title of the Proposed Action:** U.S. Army Intelligence Center, Fort Huachuca Future Development Planning.

**Introduction:** An Environmental Assessment (EA) dated November 2004 has been prepared to support the decision-making process of the U.S. Army regarding foreseeable changes to the training and testing mission at U.S. Army Intelligence Center, Fort Huachuca (USAIC, FH) . This EA was prepared in compliance with the National Environmental Policy Act (NEPA) (Public Law 91-190, 42 USC 4321-4347, as amended), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508), and AR 200-2, Environmental Effects of Army Actions (USA 1988). The EA is incorporated by reference in this FNSI.

**Description of the Proposed Action:** The Proposed Action includes foreseeable changes to the training and testing mission of USAIC, FH. Associated with these anticipated changes, certain site development activities on Fort Huachuca are currently being proposed. Finally, environmental and natural resource conservation measures currently in force at Fort Huachuca and those specifically identified to reduce the impact of anticipated changes at Fort Huachuca as a result of its changing mission are incorporated. Collectively these actions are referred to as the Proposed Action and are fully described in Section 2 of the EA.

**Alternatives Considered:** Three alternatives to the Proposed Action were considered. Alternative One included those aspects of the Proposed Action with additional site development and facility utilization, larger permanent party authorizations, greater conservation easement acreage, and restricted airspace restructuring. Alternative Two is similar to the Proposed Action but with less redevelopment in the cantonment area and Libby Army Airfield, smaller permanent party increases, and fewer acres of conservation easements. Alternative Three is the no action alternative.

**Anticipated Environmental Effects:** The EA documents that less than significant impacts to the availability of recreational hunting opportunities at the Fort would result from proposed site development and use. Beneficial impacts from the provision of additional track and field facilities would result. Adverse impacts to visual resources, local air quality, and soil conditions from construction activities and increased training and operational activities were found to be temporary and less than significant. Minor and less than significant increases in noise levels would result from temporary construction activity and additional utilization of training ranges across the Fort. The construction areas are not near human residential areas and the associated noise will not interfere with on-going military training activities.

Additional water use of 110.4 ac-ft per year is estimated with the Proposed Action; 263.7 ac-ft for Alternative One; 26.4 ac-ft for Alternative Two; status quo for Alternative Three. Due to conservation and reuse efforts and specific mitigation for this action, the installation's annual water withdrawal from the local aquifer is anticipated to continue declining. The acquisition of conservation easements and the restriction of future water pumping from these easements are anticipated to provide additional long-term reductions in water pumping in the subwatershed. The proposed site development supports this reduction trend by incorporating water conservation technologies and allowing for additional conservation technology to be installed to offset potential

water use increases from additional personnel. In addition, USAIC, FH will continue to educate its workforce on water conservation and enforce water mitigation policy.

Up to 75 acres of disturbed grasslands and another 63 acres of other vegetation could be lost during construction activities under the Proposed Action (100 acres and 103 acres under Alternative One; 35 and 63 acres under Alternative Two). No significant impact to existing wildlife (including federally-listed threatened and endangered species) is anticipated under the Proposed Action, Alternative Two or Alternative Three. No significant impact to historic or cultural resources is anticipated. Less than significant impacts on the availability of utilities, health and safety of military personnel and civilians, ground and air transportation system, and generation and transportation of hazardous wastes, materials and substances would result under the Proposed Action, Alternative Two, and Alternative Three.

The total construction cost for all facilities would be approximately \$140 million under the Proposed Action (\$210 million under Alternative One and \$70 million under Alternative Two), of which a large percentage would be spent on construction materials. A net increase of approximately 335 additional positions are required as a result of the Proposed Action to accomplish the USAIC mission (950 positions for Alternative One and 98 positions for Alternative Two). An estimated 50% of all civilian employees and contractors would relocate to the area. An additional annual payroll of \$14,753,534 would be realized once all positions were filled under the Proposed Action; \$46,222,220 for Alternative One; \$4,860,286 for Alternative Two. These additional contributions are not anticipated to represent a significant impact on the local economy.

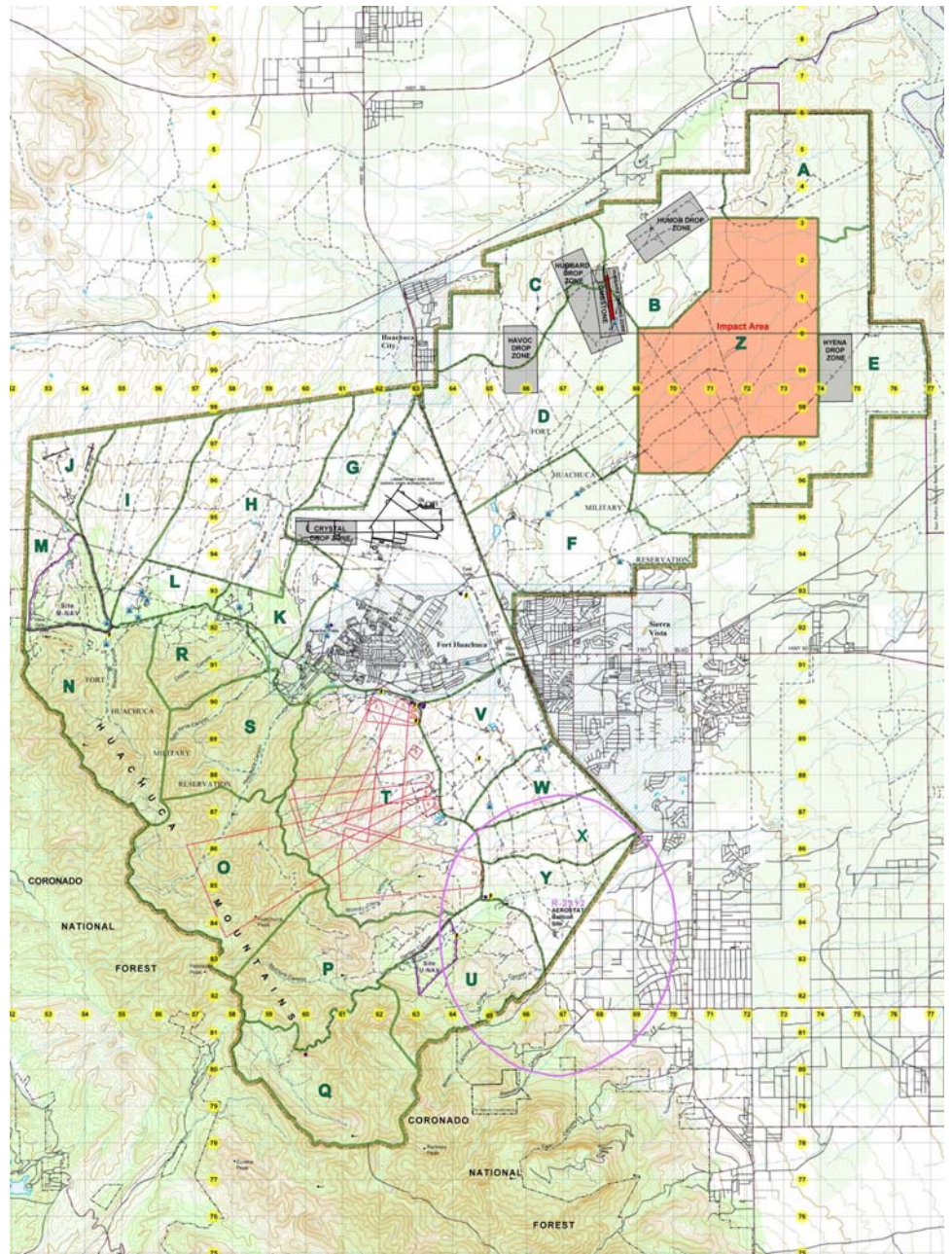
**Findings (Draft):** Based on the analysis contained in the EA, I have decided that implementation of either the Proposed Action, Alternative Two or Alternative Three does not constitute a major federal action significantly affecting the quality of the human environment. Consequently, implementation of the Proposed Action, Alternative Two, or Alternative Three does not require the preparation of an Environmental Impact Statement. Additional environmental analysis will be conducted if locations for additional development activities discussed in Alternative One are selected with an intent toward implementation.

**Public Comments:** The Army invites interested or affected parties to review and comment on this Draft FNSI within 30 days of publication by writing to Commander, U.S. Army Garrison, ATTN: ATZS-ISB (Ms Kent), Fort Huachuca, Arizona 85613-6000 or fax to (520) 533-3043. To obtain a copy of the EA, contact (520) 533-3120 and leave a name and address, or write to: U.S. Army Garrison, ATTN: ATZS-ISB (USAIC, FH EA), Fort Huachuca, Arizona 85613-6000. Copies of the EA may also be reviewed at the Sierra Vista public library or on line at: <http://huachuca-www.army.mil/USAG/DIS/DISHOME.HTM#ENRD>

**Approval authority:** Warner I. Sumpter, Brigadier General, ARNG, Commanding

# PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

Future Development Plan  
U.S. Army Intelligence Center, Fort Huachuca  
Fort Huachuca, Arizona



Prepared by:

Environmental and  
Natural Resource Division  
Directorate of Installation Support  
U.S. Army Garrison, Fort Huachuca



November 2004

## **HOW THIS ENVIRONMENTAL ASSESSMENT IS ORGANIZED**

The EXECUTIVE SUMMARY briefly describes the proposed action and alternatives. Impacts and conclusions are summarized.

SECTION 1      PURPOSE AND NEED discusses the purpose and need for the proposed action, the regulatory background surrounding the project, and the scope of this Environmental Assessment.

SECTION 2      DESCRIPTION OF PROPOSED ACTION (PA) AND ALTERNATIVES discusses the Proposed Action and alternatives addressed in this Environmental Assessment.

SECTION 3      AFFECTED ENVIRONMENTS AND CONSEQUENCES describes the existing environment within the Region of Influence. It also provides a comparison of environmental consequences associated with the different alternatives. Conservation and mitigation measures are also addressed in this section.

SECTION 4      FINDINGS AND CONCLUSIONS

SECTION 5      ACRONYMS AND ABBREVIATIONS

SECTION 6      COMBINED REFERENCES provides bibliographical information for sources cited in the text of this Environmental Assessment and appendices.

SECTION 7      LIST OF PREPARERS, CONTRIBUTORS, AND INDIVIDUALS CONTACTED

APPENDICES

## **RECOMMENDED CITATION**

USAGFH (U.S. Army Garrison, Fort Huachuca). 2004. Programmatic Environmental Assessment Future Development Plan, U.S. Army Intelligence Center, Fort Huachuca. Fort Huachuca: AZ. Environmental and Natural Resource Division. November.

## **FOR ADDITIONAL INFORMATION**

For additional information relating to this document please contact the U.S. Army Garrison Public Affairs Office at Fort Huachuca, telephone number (520) 533-1287.

# **PROGRAMMATIC ENVIRONMENTAL ASSESSMENT**

Future Development Plan  
U.S. Army Intelligence Center, Fort Huachuca  
Fort Huachuca, Arizona

Prepared by:

Environmental and Natural Resources Division  
Directorate of Installation Support  
U.S. Army Garrison, Fort Huachuca

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Approved by:

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WARNER I. SUMPTER  
Brigadier General, ARNG  
Commanding

November 2004

## EXECUTIVE SUMMARY

The U.S. Army Intelligence Center, Fort Huachuca (USAIC, FH) is transforming to meet the needs of the nation. The USAIC, FH trains and educates military intelligence (MI) professionals, develops doctrine, defines and validates MI capabilities, develops organization structures, develops MI training, anticipates future MI requirements, and participates in new MI systems and equipment development.

This Environmental Assessment (EA) was prepared to analyze the potential for significant environmental impact associated with currently foreseeable changes to the training and testing mission of USAIC, FH. Associated with anticipated changes in training and testing mission requirements, certain site development activities on Fort Huachuca are currently being proposed. Finally, environmental and natural resource conservation measures currently in force at Fort Huachuca and those specifically identified to reduce the impact of anticipated changes at Fort Huachuca as a result of its changing mission are incorporated. Collectively these actions are hereafter referred to as the Proposed Action and are fully described in Section 2 of this document.

The U.S. Army is the federal government proponent for the action and as such is required to comply with applicable federal law and Army Regulations. Specifically, this EA is prepared in accordance with the following regulations and directives:

- National Environmental Policy Act (NEPA) (42 USC 4321 et seq.)
- Council for Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)
- U.S. Army Regulation 200-2, Environmental Analysis of Army Actions (32 CFR 651)

This assessment is intended to be a concise public document that provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FNSI). NEPA requires that agencies of the federal government implement an environmental impact analysis program in order to evaluate "...major federal actions significantly affecting the quality of the human environment." A federal action may include projects financed, assisted, conducted, regulated, or approved by a federal agency that have the potential to significantly affect the human environment. This EA was also prepared in order to meet the requirements of an effective and coordinated environmental planning process. Because of the ever-changing MI requirements this evaluation must also incorporate the following assumptions:

- Fort Huachuca remains open after 2005 Base Realignment and Closure (BRAC) proceedings;
- This EA does not include any potential gains or losses from USAIC during the 2005 BRAC; and
- This EA includes Training Requirements Arbitration Panel (TRAP) FY03 student increases and permanent party gains as minimum baseline for future training loads.

Recent scoping sessions for other environmental analyses have indicated consistent concerns from both pro-growth and environmentally-concerned groups and individuals. The issues raised include those from local residents who are concerned about their continued employment related to Fort Huachuca as part of the local economic base. Other individuals and groups were concerned about the impact of groundwater pumping on the local aquifer, and the possible indirect effects of pumping on the San Pedro River and its threatened and endangered species. These issues are addressed throughout this EA under the various and applicable "Environmental Consequences" sections.

1 The Proposed Action includes the following:

- 2 • Increased training range utilization;
- 3 • Permanent party increases to 90% of the approximated Table of Distribution and Allowances
- 4 (TDA) related to USAIC activities at Fort Huachuca;
- 5 • Increased dismounted cross-country pedestrian movement;
- 6 • Increased UAV testing and training flight hours;
- 7 • Increased East Range company-level cadre training;
- 8 • Pursuit of 15,000 acres of conservation easements;
- 9 • Site development activities within the cantonment area and Libby Army Airfield (LAAF),
- 10 Training Areas India, Juliet, Lima, Papa and Victor;
- 11 • Creation of a Mounted Reaction Course (MRC) in Training Areas Hotel and Lima; and
- 12 • Refurbishment of small arms live fire ranges on the South Range.

13 Alternative One includes all aspects of the Proposed Action plus the following additional or modified  
14 activities:

- 15 • Restructured restricted airspace;
- 16 • Development and operation of an additional UAV runway in the vicinity of LAAF;
- 17 • Facility improvement and runway extension at Demonstration Hill;
- 18 • Pursuit of 25,000 acres of conservation easements;
- 19 • New live fire ranges on the South and East Ranges;
- 20 • Additional redevelopment of the Cantonment Area and LAAF;
- 21 • Additional Training Area Juliet and India facility development and operation; and
- 22 • Permanent party increases to equal 100% of the approximated TDA related to USAIC activities at
- 23 Fort Huachuca plus an additional 400 contractors.

24 Alternative Two includes fewer actions and activities than the Proposed Action. This alternative is similar  
25 to the Proposed Action with the exception of the following:

- 26 • Less redevelopment in the cantonment area and LAAF;
- 27 • Permanent party increases to equal 85% of the approximated TDA related to USAIC activities at
- 28 Fort Huachuca plus 50 contractors; and
- 29 • Pursuit of 5,000 acres of conservation easements.

30 Alternative Three is included to establish the environmental and socioeconomic baseline applicable to the  
31 action and its anticipated impacts at Fort Huachuca and in the surrounding area. Inclusion of the No-  
32 Action Alternative is prescribed by the CEQ regulations. The No-Action Alternative includes training of  
33 the increasing number of students attending various MI training courses at Fort Huachuca, erecting  
34 temporary single soldier housing (SSH), and constructing up to 400 rooms of permanent SSH as  
35 described in USAGFH 2001a, but does not include any additional permanent construction or future  
36 increase of staff and faculty to meet additional or sustained training requirements.

37 The Proposed Action and alternatives were evaluated for their potential direct, indirect, and cumulative  
38 impacts on the human environment. Table ES-1 summarizes anticipated impacts resulting from the  
39 Proposed Action and three alternatives evaluated in this EA.

**Table ES-1 Comparison of Anticipated Impacts**

<b>Resource Area</b>	<b>Proposed Action</b>	<b>Alternative One</b>	<b>Alternative Two</b>	<b>Alternative Three</b>
Land Use	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Visual Resources	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Topography, Soils or Geology	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Hydrology and Water Resources	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Biological Resources	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Historic and Cultural Resources	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Transportation and Circulation	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Air Quality	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Noise	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Hazardous Waste, Substances and Materials	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Population, Housing and Economic Conditions	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Health and Safety	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Utilities and Services	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts

<sup>1</sup> Insufficient information is available to determine the potential for significant impact associated with this resource. Additional analysis or information is required prior to any determination of anticipated significance associated with Alternative One.

Based on the analysis, it is the conclusion of this EA that neither the Proposed Action, Alternative Two (Reduced Training Capacity), or Alternative Three (No Action) would constitute a major federal action with significant impact on the human environment, and that a Finding of No Significant Impact (FNSI) for the Proposed Action and Alternatives Two and Three should be issued to conclude the NEPA documentation process. Insufficient evidence was available to determine the extent and potential significance of impacts related to Alternative One. Consequently, it was concluded that further analysis related to Alternative One would need to be completed prior to any level of impact determination.

# **1 PURPOSE AND NEED**

## **1.0 INTRODUCTION**

The U.S. Army Intelligence Center, Fort Huachuca (USAIC, FH) is transforming to meet the needs of the nation. The USAIC, FH trains and educates military intelligence (MI) professionals, develops doctrine, defines and validates MI capabilities, develops organization structures, develops MI training, anticipates future MI requirements, and participates in new MI systems and equipment development.

This Environmental Assessment (EA) was prepared to analyze the potential for significant environmental impact associated with currently foreseeable changes to the training and testing mission of USAIC, FH. Associated with anticipated changes in training and testing mission requirements, certain site development activities on Fort Huachuca are currently being proposed. Finally, environmental and natural resource conservation measures currently in force at Fort Huachuca and those specifically identified to reduce the impact of anticipated changes at Fort Huachuca as a result of its changing mission are incorporated. Collectively these actions are hereafter referred to as the Proposed Action (PA) and are fully described in Section 2 of this document.

### **1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION (PA)**

USAIC, FH provides and enhances capabilities for the training of MI personnel from across the Department of Defense (DoD), other federal agencies, and Allied nations. This includes initial entry training, training in specialty areas, cohort training of reset MI organizations, Mobile Training Teams (MTTs) for deployed and deploying units, new and upgraded systems, mid-career courses, and additional throughput in existing and possible future courses to meet operational demands. USAIC, FH's role and responsibilities in identifying and defining new intelligence, surveillance, and reconnaissance (ISR) platforms is expanding to support resetting the Army. Training is updated frequently based on lessons learned and the needs of the Army.

With the transformation of the Army into a more modular deployable force, USAIC, FH is being required to provide increased testing and training actions related to the MI mission of the DoD and the changing international situation. This transformation includes the integration of lessons learned to combat and training development, experimentation, and new-systems training. The need for some new facilities at Fort Huachuca has been identified for supporting the training environment. Site development, personnel increases and infrastructure improvements identified in this EA are anticipated to provide the additional training capacity needed at USAIC, FH to meet its changing mission requirements.

### **1.2 FRAMEWORK FOR ANALYSIS**

The U.S. Army is the federal government proponent for the action and as such is required to comply with applicable federal law and Army Regulations. Specifically, this EA is prepared in accordance with the following regulations and directives:

- National Environmental Policy Act (NEPA) (42 USC 4321 et seq.)
- Council for Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)
- U.S. Army Regulation 200-2, Environmental Analysis of Army Actions (32 CFR 651)

This assessment is intended to be a concise public document that provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FNSI). NEPA requires that agencies of the federal government implement an environmental impact analysis program in order to evaluate "...major federal actions significantly affecting the quality of the human environment." A federal action may include projects financed, assisted, conducted, regulated, or approved by a federal agency that have the potential to significantly

1 affect the human environment. This EA was also prepared in order to meet the requirements of an  
2 effective and coordinated environmental planning process. Because of the ever-changing MI requirements  
3 this evaluation must also incorporate the following assumptions:

- 4 • Fort Huachuca remains open after 2005 Base Realignment and Closure (BRAC) proceedings;
- 5 • This EA does not include any potential gains or losses from USAIC during the 2005 BRAC; and
- 6 • This EA includes Training Requirements Arbitration Panel (TRAP) FY03 student increases and  
7 permanent party gains as minimum baseline for future training loads.

### 8 **1.3 PREVIOUS DOCUMENTS INCORPORATED BY REFERENCE AND RELEVANT TO THE ANALYSIS** 9 **CONTAINED IN THIS EA**

10 The following documents contain data and present information relevant to the evaluation of impacts at  
11 Fort Huachuca resulting from the PA and alternatives and are hereby incorporated by reference into this  
12 EA:

- 13 • Programmatic Biological Assessment for Ongoing and Programmed Future Military Operations  
14 and Activities at Fort Huachuca, Arizona. U.S. Army Garrison, Fort Huachuca, July 2002  
15 (referenced as USAGFH 2002). This biological assessment (BA) evaluated ongoing and  
16 programmed military operations at the Fort and was the basis for the August 2002 biological  
17 opinion (BO) from the U.S. Fish and Wildlife Service (USFWS) (see below). A large amount of  
18 information on the Fort's special-status species and the Fort's operational effects on these species  
19 is provided by this 2002 document and only summarized as applicable herein.
- 20 • Biological Opinion, Fort Huachuca Ongoing and Programmed Future Military Operations and  
21 Activities. Arizona Ecological Services Field Office, U.S. Fish and Wildlife Service, August 23,  
22 2002 (referenced as USFWS 2002b). This BO was in response to the Fort's request for  
23 consultation with the USFWS pursuant to section 7 of the Endangered Species Act of 1973, as  
24 amended, on impacts that may result from activities authorized, carried out, or funded by the  
25 Department of the Army (DA) at and near the Fort. This 2002 BO provides a detailed listing of  
26 specific obligations that the Fort has agreed to for special-status species protection on the Fort  
27 and within the Fort's region of influence (ROI). The 2002 BO documents the USFWS position  
28 that ongoing and proposed military operations and activities at Fort Huachuca would not  
29 jeopardize the continued existence of any special-status species protected under the 1973 Act.
- 30 • Environmental Assessment, Increase in Training Load, U.S. Army Intelligence Center, Fort  
31 Huachuca, Arizona. U.S. Army Garrison, Fort Huachuca, December 2001 (referenced as  
32 USAGFH 2001a). This EA evaluated a proposed increase in training load at the USAIC which  
33 would increase the number of students and instructor personnel at the Fort to the baseline levels  
34 anticipated following the 2001 terrorism. Potential impacts related to this increased training load  
35 at the Fort were determined to be less than significant during the NEPA process. Student training  
36 levels proposed in the 2001 EA are considered as baseline levels for the purposes of this analysis.
- 37 • Fort Huachuca Future Development Master Plan Environmental Impact Statement. U.S. Army  
38 Garrison, Fort Huachuca, January 2000 (referenced as USAGFH 2000a). This EIS provides a  
39 large volume of information and data related to baseline environmental conditions at the Fort as  
40 of its publication date. Relevant baseline environmental conditions found in, and historical trend  
41 information from, the EIS are summarized in this document. The reader is invited to review the  
42 2000 EIS as referenced in this EA for a more detailed discussion.
- 43 • Environmental Assessment, Comprehensive Unmanned Aerial Vehicle Testing and Training at  
44 Fort Huachuca, Arizona. U.S. Army Garrison, Fort Huachuca, June 2000 (referenced as  
45 USAGFH 2000b). This EA evaluated the ongoing and proposed new testing and training of  
46 unmanned aerial vehicles (UAV) at the Fort as well as additional ground-related site

development, range utilization and ancillary field training. Potential impacts related to increased UAV testing and training at the Fort were determined to be less than significant during the NEPA process. UAV testing and training operations and level of activities proposed in this 2000 EA are considered as baseline levels for the purposes of this analysis.

- Environmental Assessment, Purchase, Transfer and Management of Conservation Easements in the Southern Upper San Pedro Basin of Arizona, June 2001 (referenced as USAGFH 2001). This EA describes the Conservation Easement concept, and goals for easements purchased by Fort Huachuca.

#### **1.4 PUBLIC INVOLVEMENT**

Recent scoping sessions for other environmental analyses have indicated consistent concerns from both pro-growth and environmentally-concerned groups and individuals. The issues raised include those from local residents who are concerned about their continued employment related to Fort Huachuca as part of the local economic base. Other individuals and groups were concerned about the impact of groundwater pumping on the local aquifer, and the possible indirect effects of pumping on the San Pedro River and its threatened and endangered species. These issues are addressed throughout this EA under the various and applicable "Environmental Consequences" sections.

In keeping with established Army policy regarding an open decision-making process, this EA will be made available to applicable federal, state, and local agencies and the general public for review and comment. A Notification of Availability (NOA) will be published in the Sierra Vista Herald and Arizona Daily Star (Tucson) newspapers. Copies of this document are available at the Sierra Vista, Bisbee, and Huachuca City Public Libraries and at the U.S. Army Garrison Public Affairs Office at Fort Huachuca, telephone number (520) 533-1287. Copies may also be reviewed or obtained at the Environmental and Natural Resources Division (ENRD) Office at Fort Huachuca, telephone number (520) 533-3120.

Comments from the public on the findings of this EA are welcome. Public comments must be postmarked within 30 days from the publication of the NOA to be considered in the NEPA process. Comments can be addressed to:

**Commander, U.S. Army Garrison  
Environmental and Natural Resources Division  
ATTN: ATZS ISB (Ms Kent)  
Fort Huachuca, Arizona 85613-7010**

Comments may also be faxed (to the attention above) to (520) 533-3043. Upon completion of the 30-day review period and after the Army has considered all comments and taken all appropriate actions, a decision document in the form of a FNSI or a Notice of Intent (NOI) to complete an EIS will be issued.

## 2 DESCRIPTION OF PROPOSED ACTION (PA) AND ALTERNATIVES

This section provides a description of the PA and alternatives considered in an effort to identify potentially affected environments and potential impacts to these environments.

### 2.0 PROPOSED ACTION – MODIFIED TRAINING CAPACITY

The PA includes several related actions and activities on Fort Huachuca that are being proposed to support the changing training and testing mission of USAIC, FH. Together these actions and activities are evaluated in a programmatic context for direct, indirect, and cumulative impacts. Together the actions described in Section 2.0 and its subsections are hereafter referred to as the PA.

Details about specific locations for proposed new training facilities are omitted from this document for security purposes. General locations for proposed facilities are provided. Sufficient information related to potential site-specific impacts is provided in this EA to support and justify the determinations reached.

#### 2.0.1 Currently Proposed Programmatic Changes

A number of programmatic changes could occur at the Fort for which site-specific details are presently unknown. For the purposes of this analysis, and based on the best available understanding of potential changes at the Fort from USAIC's changing mission requirements, the following items are included in the PA and potential impacts resulting from their occurrence is estimated to the extent possible.

Increased Training Range Utilization. The PA includes a projected increase in use of all active training ranges on the Fort. This represents an increase in existing levels of operation and number of exercises to be conducted on the Fort for which previous environmental analysis has been conducted.

Permanent Party Increases. This alternative includes the addition of personnel to equal 90% of the approximated Table of Distribution and Allowances (TDA) related to USAIC activities at Fort Huachuca.

Increased Dismounted Cross-Country Pedestrian Movement. Soldiers will conduct an increased number of situational training exercises (STXs) on Fort Huachuca using dismounted cross-country pedestrian movement and blank ammunition. This STX training could occur within any training range or area currently permitted for such activities. Additional unarmed, dismounted training may also occur in other rural and urban settings. This may include training both on and off the Fort. The purpose of the training is to learn to assess and inventory fixed facilities. Rural training is described by USAIC as training in rural movement, communications and area assessment skills and would take place approximately 6 to 8 times a year in one of two designated off-post locations. Urban Training is described by USAIC as training in urban resourcefulness, transportation assessment, communications and area assessment skills and would take place approximately 6 to 8 times a year in various locations in an around nearby urban centers.

Increased UAV Testing and Training Flight Hours and Launch and Recovery Operations. Baseline UAV activity as well as descriptions of the various UAV operations at Fort Huachuca are outlined in USAGFH 2000b. An updated projection of the flying hours for the next five years is shown in Table 2.0-1.

**Table 2.0-1 Anticipated UAV Testing and Training Flight Hours (FY05 - FY09)**

<b>Aerial Vehicle</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
Special Electronic Mission Aircraft (SEMA)	3600	3600	3600	3600	3600
Shadow UAV	2764	3652	3652	1876	1876
Hunter UAV	6364	6364	6364	6364	6364
Extended Range/Multi Purpose (ER/MP) UAV	0	2500	2500	2500	2500
Fire Scout UAV	0	0	0	1250	1250

UAV operations would continue at existing facilities but at a higher frequency. No new UAV launch and recovery facilities would be operated under the PA.

Increased East Range Company-level Cadre Training. Company-level cadre training operations within the East Range would continue and include convoy operations on established and maintained paved and dirt roads, dismounted cross-country pedestrian movement, sensor operations, land navigation, radar operations, and basic tactical operations center and bivouac operations (vehicles, shelters, tents, generators). Instead of digging fighting positions personnel would transport sand to the training sites and fill sand bags to build up defensive positions. No maintenance of vehicles would occur beyond operator-level maintenance. Refueling operations would occur with existing Brigade assets. Training areas to be used include Alpha, Bravo, Delta, and Foxtrot. Exercises would typically occur for 10-12 day periods 3-4 times per year. No field kitchens would be authorized and food would be delivered from dining facilities on the main post. No field showers would be authorized.

Protection of up to 15,000 Acres through Conservation Easements. Under the PA a total of up to 15,000 acres of off-post land would be protected through conservation easements. Selected conservation easement within 5 miles of the Fort would be purchased from willing sellers using federal funds. The specific types of conservation easements could include restrictions on rights to subdivide property into smaller plots. Actual property may either remain in ownership by the original private owner with reduced ability to irrigate or subdivide parts of the property; or may be sold to a willing private buyer to use in activities compatible with reduced-density land uses. Additional information on the concept is contained in the Environmental Assessment entitled: Purchase, Transfer and Management of Conservation Easements in the Southern Upper San Pedro Basin of Arizona, June 2001.

## **2.0.2 Currently Proposed Site Development Activities**

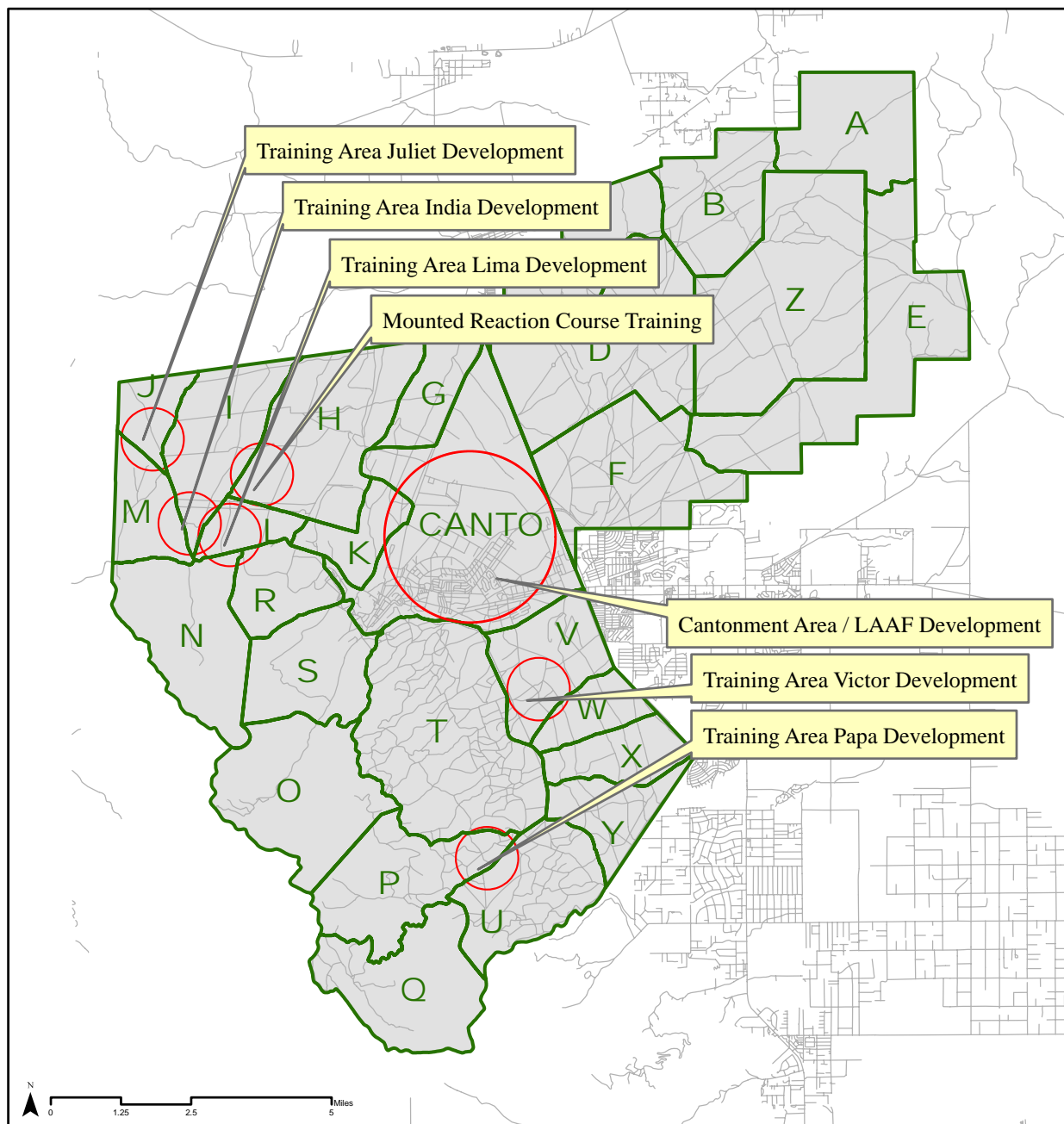
Certain site development activities have been identified as a part of the PA. The general locations of these activities are identified in Figure 1 with further detail as follows.

Cantonment Area and Libby Army Airfield. The PA includes the redevelopment (construction) and use of up to 75 acres and/or up to 1 million gross sq. ft. of real property inside the cantonment area and Libby Army Airfield (LAAF). The specific locations for development are not presently known, but would be limited to previously disturbed areas.

Training Area India. The PA includes the development and use of up to 20 acres in Training Area India. The site could provide a MI testing and training campus for ongoing or future MI systems. Site development and improvements may include buildings, concrete or asphalt equipment pads, ground control pads, a service drive to the complex, a parking area, local traffic control, and on-site erosion control and roof-top storm water collection systems. Utilities would be extended to the site from nearby systems. The entire site would be surrounded by an 8 to 10' chain link fence topped with barbed wire.

Training Area Juliet. The PA includes the development and use of up to 10 acres in Training Area Juliet (located on the West Range) adjacent to the existing Black Tower UAV Complex. The site could include administrative, dining, or recreational facilities and provide additional fire fighting, security or operational infrastructure. New parking areas could be established. Utilities would be extended to the site from nearby utility easements along the roadway. Additional vehicle traffic to and from the site would result on established paved roads.

Training Area Lima. The PA includes the development and use of up to 5 acres in Training Area Lima (West Range) adjacent to an existing training facility. The enlarged facility would remain similar to other sites and training village locations on Fort Huachuca using a combination of temporary and permanent facilities and infrastructure. Utilities would be extended to the site from nearby systems along an existing utility easement that was recently disturbed during underground telephone cable installation. Additional vehicle traffic to and from the site would result on established roads.



### Legend

- Generalized Development Locations
- Training Areas
- Roads

**Figure 1**

**Fort Huachuca**

1 Training Area Papa. The PA includes the development and use of up to 6 acres in Training Area Papa  
2 (South Range) in an area of moderately disturbed grassland (there are existing roads and other man-made  
3 improvements). This development would be a duplication of existing Site Uniform. Site development  
4 would include a number of small buildings, paved and unpaved roadways, observation points, with  
5 associated training activities outside the fenced areas. Utilities would be extended to the site. The entire  
6 site would be surrounded by an 8-10' chain link fence topped with barbed wire. Access roads to and  
7 surrounding the site may require the installation of water-bars and turn-outs and additional maintenance  
8 due to local topographic variations and storm water flows.

9 Training Area Victor. The PA includes the development and utilization of up to 20 acres within Training  
10 Area Victor (located on the South Range) in an area of moderately disturbed grassland (there are existing  
11 dirt roads, stockpiled dirt mounds and a lightning shelter). Proposed site development would include a  
12 new Military Operations on Urban Terrain (MOUT) training site.

13 The area would require site preparation and development to accommodate an artificial urban training  
14 environment for MI and other personnel to conduct mounted and dismounted tactical training. The site  
15 would require power and potable water. Sanitation would be accomplished through portable toilets (port-  
16 a-pots). Initially, the site could consist of several buildings surrounded by an 8-10' chain link fence  
17 topped with barbed wire.

18 Mounted Reaction Course. An existing loop of unpaved roads (approximately 3.75 miles) in Training  
19 Areas Lima and Hotel would be converted into an STX lane for mounted reaction course training  
20 exercises to simulate real world conditions. The course would include the placement of training aids such  
21 as huts, derelict cars/trucks, debris piles, and other hiding places for mock aggressor forces along the lane  
22 within 75 feet of the roadway. These items would be temporary in nature and not permanent facilities.  
23 Ground disturbance from dismounted pedestrian movement could also result in this area. Simulated  
24 improvised explosive devices (IED) could also be used on the interior of the STX lane using established  
25 Range Control guidelines and restrictions for the use of pyrotechnics on Fort Huachuca. The specific  
26 locations for the use of IEDs would meet Range Control requirements for fire control and suppression as  
27 provided in existing regulations. Up to ten locations designated as vehicle pull-off areas (or turn-outs)  
28 could be established along the course in areas at least partially disturbed from previous and ongoing  
29 routine road maintenance. Paintball weapons could be used by the mock aggressor forces on either side of  
30 the STX lane. All administrative and tactical vehicle traffic would be limited to existing dirt roads and  
31 nearby parking areas. No new parking areas would be constructed. Continued roadway maintenance  
32 would be required along the route to ensure proper functioning of the course.

33 Small Arms Firing Ranges on the South Range. The PA includes repair and refurbishment of existing  
34 established small arms firing ranges on the South Range (all ranges with the exception of #5, and the  
35 #12s). Site improvements may include road improvements, reconfiguring targets within existing range  
36 footprints, upgrading target mechanisms, reconfiguring firing points or revamping entire ranges to be  
37 used for different weapons systems. This does not include activating or reopening any ranges for firing of  
38 field artillery or tanks and does not require the designation of new impact areas or safety zones.

## 39 **2.1 ALTERNATIVE ONE – ENHANCED TRAINING CAPACITY**

40 Alternative One includes all aspects of the PA plus the following additional activities:

41 Restructured Airspace. Restricted Airspace at Fort Huachuca could be restructured to accommodate  
42 additional operational requirements. This restructuring could include a change in the physical limitations  
43 of the airspace or other operational dimensions. A specific plan for airspace restructuring is not available  
44 for this analysis.

45 Additional UAV Launch and Recovery Facility in the Vicinity of LAAF. This alternative includes the  
46 construction and operation of one additional UAV launch and recovery facility (or runway) in the vicinity

of LAAF. A specific location and plan for this runway has not been developed but it is anticipated to be either contiguous to LAAF or at a site outside of the cantonment area in the vicinity of LAAF.

Infrastructure and Facility Redevelopment and Runway Extension at Demonstration Hill. This alternative includes the redevelopment of existing facilities and runway extension (to 5,000 ft) of the Demonstration Hill facility for UAV operations. A specific location and plan for this site has not been developed but it is anticipated that the site would be developed similar to the description provided for proposed site in Training Area India (see above).

Protection of up to 25,000 Acres through Conservation Easements. Under this alternative up to 25,000 acres of off-post land would be protected through conservation easements. The locations of this acreage is not currently known, but is expected to be near or contiguous with the Fort.

Development and Operation of New Live Fire Ranges on the South and East Ranges. This alternative includes the development and operation of additional small arms live fire ranges on the South or East Ranges at the Fort. These potential ranges are anticipated to be sited in areas that meet all applicable DoD, Army and Fort Huachuca firing range design and development regulations.

Redevelopment of the Cantonment Area and LAAF. Up to 1.5 million gross sq. ft. of facilities construction. This represents an increase of 0.5 million sq. ft. over the PA.

Additional Training Area Juliet Development. This alternative includes the development and operation of a 30-acre UAV testing and training campus in the vicinity of the current UAV School (located on the West Range). This development is in addition to that described for Training Area Juliet under the PA. The specific location for this development is not available but is anticipated to be contiguous to or within the vicinity of the existing Black Tower UAV Complex.

Training Area India Development. The PA includes the development and use of up to 20 acres in Training Area India. Alternative One includes this same site development but with additional operational capabilities. Alternative One would include the launch and recovery of UAVs (both rotary wing and fixed wing). Site development and improvements would be similar to those identified under the PA but would also include a large runway, the creation of safety zones at the end of the runway, and the ability to operate the facility 24 hours per day 7 days per week.

Permanent Party Increases. This alternative includes the addition of personnel to equal 100% of the approximated TDA related to USAIC activities at Fort Huachuca plus an additional 400 contractors.

## **2.2 ALTERNATIVE TWO – REDUCED TRAINING CAPACITY**

Alternative Two includes fewer actions and activities than the PA. This alternative is similar to the PA, but at a lower intensity level. Construction/redevelopment would be less, at up to 35 acres or 500,000 gross sq. ft. of redevelopment in the cantonment area and on LAAF. The permanent party increases would equal 85% of the approximated USAIC TDA plus 50 contractors. A total of up to 5,000 acres of off-post land would be protected through conservation easements. The locations of this acreage is not currently known, but is expected to be contiguous to the Fort.

## **2.3 ALTERNATIVE THREE – NO ACTION**

This alternative required by law to establish the baseline applicable to the action and its anticipated impacts in the ROI. The no-action alternative includes training of the increasing number of students attending various MI training courses at Fort Huachuca, erecting temporary single soldier housing (SSH), and constructing up to 400 rooms of permanent SSH as described in USAGFH 2001a, but does not include any additional permanent construction or future increase of staff and faculty to meet additional or sustained training requirements. The no-action alternative also would not include any site development or range improvements in the training areas. The no-action alternative would not adequately support the

changing training and testing mission requirements of USAIC, FH, but is analyzed in this document as required by the NEPA.

## 2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

Scoping meetings and location site visits occurred during the development of the alternatives for this EA. Several site-selection alternatives were reviewed during this preliminary scoping phase and eliminated from further consideration due to on-site operational or environmental concerns and limitations.

## 2.5 COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

The PA and three alternatives including a no-action alternative (Alternative Three) are carried forward for analysis. Table 2.5-1 presents each of the alternatives in comparison to the activities associated with the PA and the stated purpose and need of the PA.

**Table 2.5-1 Comparison of Proposed Action and Alternatives**

Activities / Locations	Proposed Action (PA)	Alternative One	Alternative Two	No Action
Programmatic Changes	Increased training range utilization and protection of up to 15,000 acres of conservation easements in region	Same as PA but with up to 25,000 acres of conservation easements	Same as PA but with up to 5,000 acres of conservation easements	Status quo
Cantonment Area and Libby Army Airfield	Up to 75 acres or 1 million gross square feet of redevelopment in previously disturbed areas	Up to 100 acres or 1.5 million gross square feet	Up to 35 acres or 0.5 million gross square feet	Status quo
Training Area India	Up to 20 acres of development	Similar to PA but to include the launch and recovery of UAVs	Same as PA	Status quo
Training Area Juliet	Up to 10 acres of development	Up to 40 acres of development	Same as PA	Status quo
Training Area Lima	Up to 5 acres of development	Same as PA	Same as PA	Status quo
Training Area Papa	Up to 6 acres of development	Same as PA	Same as PA but with temporary construction (shelters plus fence)	Status quo
Training Area Victor	Up to 20 acres of development	Same as PA	Same as PA but with temporary construction (shelters plus fence)	Status quo
Small arms firing ranges	Upgrade and refurbish existing ranges	Upgrade and refurbish existing ranges; build new live fire ranges	Same as PA	Status quo
Testing and training activities	Increased UAV activity, dismounted traffic, East Range training; new MRC	Same as PA	Same as PA	Status quo
Student throughput	To be directed by TRADOC. This reflects the status quo	Same as PA	Same as PA	Status quo
Permanent party increases	Add to 90% of TDA	Add to 100% of TDA plus 400 contractors to result between FY05-10	Add to 85% of TDA plus 50 contractors to result between FY05-10	Status quo
Airspace modification	Status quo	Possible restructuring	Status quo	Status quo
UAV launch and recovery (L&R) facilities	Status quo	New UAV L&R facility near LAAF; new UAV L&R facilities in Training Areas India and Juliet; improvement of existing Demo Hill facility and runway extension.	Status quo	Status quo

### 3 AFFECTED ENVIRONMENTS AND CONSEQUENCES

#### 3.0 INTRODUCTION

This section is intended to provide sufficient information to determine the potential for significant impact associated with the PA and alternatives. As stated in CEQ Guidelines 40 CFR 1508.14 the “human environment potentially affected” is interpreted comprehensively to include the natural and physical resources and the relationship of people with those resources. The term "environment" as used in this report encompasses all aspects of the physical, biological, social, and cultural surroundings.

A description of general baseline environmental conditions at Fort Huachuca and within the region was prepared in November 2004 and is provided in Appendix A. Site specific environmental conditions or observations are provided in Appendix B of this document.

Potential changes or impacts to the environment as a result of the PA or alternatives are described as potential consequences. These consequences include:

- Direct effects which are caused by the action and occur at the same time and place.
- Indirect effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
- Cumulative effects which are those impacts attributable to the PA combined with other past, present, or reasonably foreseeable future impacts regardless of the source. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Consequences, effects and impacts as used in these regulations are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the Army believes that the effect will be beneficial.

The significance of potential impact on the natural or built environment depends upon context, setting, likelihood of occurrence, and severity, intensity, magnitude, or duration of the impact. "Significantly" as used in NEPA requires considerations of both context and intensity:

- Context refers to the significance of an action must be analyzed in several contexts such as society as a whole (human and national), the affected region, the affected interests, and the locality.
- Intensity refers to the severity of impact.

The analysis of environmental consequences requires the evaluation of a broad range of information that may have a relationship to the PA and alternatives. A good understanding of the politics, sociology, economics, and environment of the region is key to this analysis, as is an accurate evaluation of factors that contribute to potential impacts.

#### 3.1 POTENTIAL CONSEQUENCES TO LAND USE AND RECREATION

The potential for adverse impact to local and regional land use is evaluated based on the compatibility of land uses associated with the PA and alternatives with on-site and adjacent land uses and zoning, and consistency with general plans and other applicable land use plans and regulations.

Adverse impacts on land use typically result when:

- The action is incompatible with existing on-site or adjacent land use and results in a long-term disruption of the use of such lands;
- The action conflicts with the environmental goals, objectives, or guidelines of a Installation Master Plan, Integrated Natural Resource Management Plan, or other Army or installation regulations or directives for the area affected; or
- The action alters the use of the land in a way that is incompatible with, and reduces the existing or programmed utility of, adjacent and surrounding land uses.

Factors considered in determining impacts on recreation resources include:

- Disruption of recreational use of resources, such as parks or recreational paths, or interference with the public's continued right of access to these areas; or
- Prevention of long-term recreational use, prevention of use during peak season.

The Region of Influence (ROI) for land use encompasses the entire Fort and areas immediately adjacent to and surrounding the existing Fort boundary.

### **3.1.1 Proposed Action**

Impacts from Site Development. Proposed facility improvements and new construction activities within the cantonment area or at LAAF would occur at locations at or adjacent to existing and similar administrative or training facilities. Available site development locations within the cantonment area are typically disturbed "infill" locations that have been reserved for future site expansion or increased facility densities. The Fort Huachuca Real Property Master Plan requires redevelopment and new development to be located in designated land use zones within the cantonment area to prevent land use conflicts between adjacent properties. Consequently, potential impacts to land use from proposed site development or redevelopment within the cantonment area or at LAAF is a less than significant impact.

Site development in Training Areas India, Juliet, and Lima would occur near or adjacent to existing facilities designated for similar uses. Proposed development at both locations would conform to existing training range land uses and would not result in a significant impact to on-site or adjacent land uses.

Proposed facility development in Training Areas Papa and Victor would occur in remote areas on the Fort, away from any other major facilities or developments. Development at both sites would occur in existing training areas that support the type of training being proposed and would not result in a significant impact to land use on the Fort. During and after construction, land uses (including hunting) may be temporarily affected. This impact is less than significant because it would be localized and temporary.

The refurbishment of the small arms firing ranges would have no impact on land use. The establishment of an MRC course on existing unpaved roads in Training Areas Lima and Hotel would restrict other military and public access to the road course during training events, but is not anticipated to result in any adverse impact on the use of the area.

Impacts on Natural Resources Management and Recreational Land Use. Impacts on natural resources management and recreational land use are associated with the introduction of new land uses across the Fort or the provision or restriction of recreation or other natural resource uses. Proposed site development within the cantonment area would result in a beneficial impact on recreational resources at the Fort. Associated with the PA is refurbishing and upgrading of physical training areas and converting existing disturbed areas into improved physical training areas.

Proposed development sites within Training Areas India, Lima, and Juliet are within 0.25 miles of existing test or training facilities where hunting is not permitted and very few recreational activities occur.

The establishment of new facilities at these locations would increase the required safety buffer distance around facilities where hunting is not permitted resulting in a net loss of approximately 15 acres of medium-quality hunting areas from public use. Development within Training Area Papa would remove an additional 10 acres of higher quality hunting areas from public use for similar reasons. There is no hunting permitted in Training Area Victor. Establishment of the MRC training route would restrict public access to the approximately 3.75 miles of unpaved roads in Training Areas Hotel and Lima and areas accessed via the same roads. Outside of those times when training is being conducted public access to the road loop would remain open. Overall, anticipated impacts on recreational resources are not anticipated to be significant, based on the remaining availability of other similar areas on the Fort and within the region.

Impacts from Conservation Easements. Conservation easements within the subwatershed would contribute to improved water quality by reserving on-site percolation and recharge and would be designed to reduce future groundwater pumping within the subwatershed. They would help protect the existing rural landscape and scenic beauty.

The establishment of additional conservation easements within the Sierra Vista subwatershed would have an impact on future land uses in those areas through the restriction of future development or other consumptive uses as outlined in the easement agreement. This impact would reduce the availability of land for development within the subwatershed and may subsequently increase development pressures on other nearby lands. This may result in a net positive benefit for neighboring landowners. The acquisition of additional conservation easements near Fort Huachuca may reduce the potential for long-term land use incompatibilities and conflicts, and provide a beneficial impact to ecosystem health within the subwatershed. This action would represent a less than significant impact on the human environment.

Impacts from Increased Training Activities. Land areas within Fort Huachuca that would be used for proposed training are currently being used for similar training. There is no significant land use difference between current training and proposed training. Increased utilization of training ranges would result in the land being more intensively used under the PA. To prevent land degradation and to allow for the continued use of training lands, the Army incorporates all training lands into its Integrated Training Area Management (ITAM) program which works to maintain the utility of the Fort's military training environment. Consequently, impacts to land use from proposed training is anticipated to be less than significant.

Impacts from Increased Frequency of UAV Flight Operations. The anticipated increase in annual UAV operations, including night time activities both at on-post UAV facilities and off-post within special use restricted airspace, would not create any land use conflicts and would be compatible with on-site and underlying land uses. Noises generated during UAV activities would not change or affect any existing or planned land uses and would not conflict with any land use planning guidelines. Off-post areas that would be exposed to UAV overflights are sparsely populated, with a few small towns and scattered houses between Elgin and Patagonia to the west. The impact of noise on public health and human safety is described in Section 4.3, below, and not addressed here. However, because of the relatively low noise levels and infrequency of overflights, their impact will not create any adverse land use conflicts or contribute to any degradation of existing land use value. There will be no significant impacts to land use within the ROI due to proposed increases in the frequency of UAV flight operations.

### **3.1.2 Alternative One**

Impacts to land use and recreation would be largely the same under Alternative One as under the PA. Additional site development within the cantonment area and training areas across the Fort would result under this alternative but not to the extent that it would substantially increase adverse impacts to land uses or availability of, and public access to, recreational resources on the Fort. Increased urbanization of the cantonment area would not result in any significant impact on land uses as it would also occur in largely disturbed "infill" locations adjacent or near similar development. Additional UAV training facilities on the West Range would occur in training areas already used or permitted for similar training activities.

1 The improvement of facilities and extension of runway at Demolition Hill would adversely impact lands  
2 being used by the Buffalo Corral for recreational horseback riding and grazing. The existing horse corral  
3 would either be relocated further from the runway area or closed.

4 An additional 10,000 acres of conservation easements would be sought under this alternative. The types  
5 of impacts from this additional area would be identical to that discussed under the PA but to a larger  
6 degree.

7 Under this alternative, an additional runway at LAAF could be constructed. This would require  
8 establishment of safety zones at the end of the runways, prohibiting or greatly reducing future site  
9 development or public uses of the lands. The extent of this impact can not be evaluated unless a site-  
10 specific runway design is completed. Consequently, there is insufficient information available to  
11 determine the potential significance of land use impacts from the development of an additional runway at  
12 LAAF.

### 13 **3.1.3 Alternative Two**

14 Impacts to land use and recreation would be largely the same under Alternative Two as under the PA.  
15 Less development in the cantonment area would result and fewer acres of conservation easements would  
16 be sought. Impacts to land use as a result of the reduced scale of development and areas of conservation  
17 easements associated with this alternative would be less than those identified for the PA and less than  
18 significant.

### 19 **3.1.4 Alternative Three**

20 The baseline of current conditions and training exercises at all of the facilities would continue under the  
21 no action alternative. The Army would continue to operate and maintain its range and training area  
22 facilities in order to meet its training mission requirement. Invariably, the level of training would change  
23 occasionally in response to this requirement. The level of use of the installation's training assets is not  
24 anticipated to alter the land use character of the Fort itself or adjacent properties. Consequently, less than  
25 significant impacts to land use and recreation are anticipated.

### 26 **3.1.5 Cumulative Impacts**

27 Over the past several years, development within the cantonment area has been guided by the Fort  
28 Huachuca Real Property Master Plan and Fort Huachuca Master Planner. The development of new  
29 military housing has resulted in an updated residential district in the southern portion of the cantonment  
30 area. Construction of new administrative facilities throughout the cantonment has added to the increased  
31 urbanization of the northern portion of the cantonment area. Both of these areas have been developed  
32 under the oversight of the Real Property Master Plan and Fort Huachuca Master Planner and have been  
33 designed to reduce incompatibilities between land uses within the cantonment area. Table 3.1-2 identifies  
34 currently programmed facility development on Fort Huachuca.

35 Utilization of training ranges at the Fort is under the direction of the Fort Huachuca Range Control  
36 Officer and applicable range control regulations as promulgated by the Fort. An increase in training  
37 requirements at the Fort will continue to exert scheduling pressures for the use of these ranges and could  
38 eventually result in a potential limitation on the capability of the Fort to provide its tenants and personnel  
39 with adequate training resources if improvements are not made.

40 Recreational use of Fort property has increased over the past several years as more and more personnel  
41 and their families as well as the public have become aware of, and in interested in, outdoors activities  
42 such as hunting, fishing, birding, hiking, and horseback riding that the Fort offers. Continued  
43 development on Fort Huachuca could eventually reduce the lands or resources available for recreational  
44 use to a point where degradation to available resources may result from overuse or over-utilization,  
45 however the integrated natural resources management planning process is in place to manage these  
46 impacts.

## 3.2 VISUAL RESOURCES

Visual resources are assessed by estimating the amount of visual change to the basic visual resource components of water, landform, vegetation, and human-made elements as a result of the project. Visual resource components typically are measured in terms of the amount of change in design elements, such as form, line, color, texture, and scale in the landscape. Within this context, visual changes are evaluated in terms of the degree to which they may be visible to the viewer - foreground, middle ground, and background views - and the general sensitivity of the view to landscape alterations. Adverse impacts on visual resources typically result when:

- The action permanently alters a site so that a sensitive viewing point or vista is obstructed or adversely affected;
- The action prevents or substantially impairs the view from a sensitive viewpoint for the duration of the project;
- The action includes the installation of bright, uncomfortable, or visually disturbing lighting that would be seen from nearby public or residential areas, roadways or adjacent locations and result in a hazard to human health or safety;
- The action results in a substantial degradation of an existing viewshed or alteration of the character of a viewshed by the introduction of anomalous structures or elements resulting in a demonstrable and significant adverse economic impact to public or private landowners; or
- Development associated with a PA fails to comply with existing site development ordinances, regulations or instructions relating to architectural treatments and aesthetic guidelines.

The ROI for visual resources includes the existing visual setting in and around Fort Huachuca as it is defined by on-post and off-post features and various views from particular vantage points (i.e., viewsheds) that encompass those features.

### 3.2.1 Proposed Action

Impairment of Views During the Construction Phase. The PA would result in short-term impacts on views at Fort Huachuca during the construction phase. This impairment would result from a change in the general appearance of each of these areas by using earth-moving equipment, transporting and storing materials on-site, erecting temporary fencing and implementing erosion-control measures, and constructing buildings at project sites. Short-term impacts to visibility under this alternative could also occur as a result of temporary releases of fugitive dust from construction sites. Due to the short-term nature of the construction activity these impacts are not considered significant.

Modification of the Existing View. Minor impacts on existing views are expected to occur at Fort Huachuca as a result of construction activities across the installation. Construction projects within the cantonment area and LAAF would occur in areas of disturbed grasslands or open space and could be visible from major roadways on the Fort. Proposed development is consistent with the urbanized nature of the northern portion of the cantonment area and LAAF.

Proposed development in Training Areas India, Juliet, and Lima would occur adjacent to or near existing developments of similar composition and form and would not result in a significant change to views of and from the areas. Where practicable, the Fort is committed to enhancing existing site conditions to help screen new developments on the south and west ranges from the surrounding areas. The proposed UAV facility in Training Areas India, Juliet, and Lima would be developed to conserve existing natural features, including terrain and vegetative cover, to the extent practicable. The facilities would be located to maximize use of natural screening if possible.

Development in Training Area Papa and Victor would occur in more remote areas away from any off-post views. The use of existing native vegetation for screening is a part of the preferred site design for MOUT

sites and similar MI training facilities and would reduce impacts to existing views of and from the sites. Overall no significant impact to existing views of, or from, Fort Huachuca is anticipated.

Alteration of Landscape Character. Current open spaces would be replaced in part by the proposed facilities and would be visible from certain foreground and middle ground views from within and adjacent to Fort Huachuca. The urbanized nature of the cantonment area and LAAF is the most prominent feature of the Fort (with the exception of the Huachuca Mountains) seen from nearby public roads and lands. Increased development within these areas would not result in any significant alteration of landscape character on the Fort as would be noticed from adjacent public roads and lands.

Proposed development on the training ranges would introduce additional built elements to the visual landscape of the areas. The expansion of the UAV complex in Training Area Juliet would be visible from the few off-post public areas to the west of the Fort. The form and structure of the proposed development would be similar to existing developments adjacent to the site and would not result in any significant change to the view. The remaining areas proposed for development are not visible from off-post public lands. Due to the remote locations of these proposed facilities, relatively few military personnel and members of the public would notice the minor change in landscape character. Consequently, no significant impact to the landscape character of Fort Huachuca is anticipated as a result of the PA.

### **3.2.2 Alternative One**

Impairment of views during the construction phase, modification of existing views, and alteration of landscape character would be largely the same under Alternative One as under the PA. Additional site development within the cantonment area and training areas across the Fort would result under this alternative but not to the extent that it would substantially increase adverse impacts to the visual character of the Fort. As would be the case for the PA, impacts to visual resources would have a less than significant impact to the human environment under this alternative.

### **3.2.3 Alternative Two**

Impairment of views during the construction phase, modification of existing views, and alteration of landscape character would be largely the same under Alternative Two as under the PA. There would be less site development within the cantonment area and training areas across the Fort under this alternative but not to the extent that it would result substantially decrease adverse impacts to the visual character of the Fort. As would be the case for the PA, impacts to visual resources would have a less than significant impact on the human environment under this alternative.

### **3.2.4 Alternative Three**

The baseline of current conditions and training exercises at all of the facilities would continue under the no action alternative. The Army would continue to operate and maintain its range and training area facilities in order to meet its training mission requirement. Invariably, the level of training would change occasionally in response to this requirement, and, consequently, the visual impact as a result of these changes might be altered as well. The level of use of the installation's training assets is not anticipated to alter the physical character of the landscape itself, and no impacts are expected to visual resources in the ROI.

### **3.2.5 Cumulative Impacts**

Ongoing redevelopment at Fort Huachuca is transforming it into a more modern campus-like setting. The recent construction of military housing projects in the southern part of the cantonment area has improved the aesthetic conditions at these sites. The use of consistent building design guidelines for new administrative buildings at the Fort has resulted in more unified design setting in the northern portion of the cantonment area. The unique presence of wooden buildings associated with the historic district at the Fort is protected from destruction or adverse alteration by federal Historic Property laws and Army Regulations. Overall, the landscape character of the Fort continues to evolve into a more modern and

aesthetically contiguous development in response to changing military mission needs of the Army and adherence to proactive master planning and design guidelines.

### 3.3 TOPOGRAPHY, SOILS, AND GEOLOGY

Topographic impacts relate to the potential for large-scale adverse alteration of local topographic conditions. Soil impacts typically refer to the level of anticipated soil redistribution. These impacts both relate to the amount and type of disturbance that can be attributed to the PA or alternatives. Adverse impacts on soil resources typically result when:

- Erosion from project-related activities results in an appreciable loss of topsoil that endangers human health or safety or ecological conditions; or
- Increased down-stream sedimentation and soil redistribution caused by grading or impervious surfacing impedes the function of existing drainage facilities and watercourses resulting in an increased risk to human health and safety or critical ecological constituents.

In addition, adverse impacts could also result if construction activities or operations have a high potential for soil contamination that endangers human health and safety or ecological constituents. This consideration is discussed in Section 3.11 *Hazardous Waste, Substances and Materials*, and is not repeated here.

Geologic impacts can be direct (addressed in this section) or indirect related to groundwater (covered in Section 3.4 *Hydrology and Water Resources*). Adverse impacts on geologic resources typically result when an action:

- Results in a substantial loss of soil (such as through increased erosion), or loss of access to economically significant mineral deposits;
- Adversely affects human health or environmental receptors, such as through exposure to toxic chemicals or irritants present in geologic materials;
- Adversely alters existing geologic conditions or processes such that the existing or potential benefits of the geologic resource are reduced;
- Permanently damages or alters a unique or recognized geologic features or landmarks; or
- Results in an increased potential for the existence of geologic hazards such as sinkholes, caves, mines, or quarries that pose a threat to human health or safety.

The ROI for these resources is defined by the area within which an action may indirectly or directly cause changes in the character of the resource. This includes direct changes due to proposed earth disturbing activities as well as potential down-stream activities that may result from increased “up-stream” erosion, sedimentation or change in topographic condition.

#### 3.3.1 Proposed Action

Impacts from Site Development. No significant impacts to topography or geological resources are anticipated from site development associated with the PA. While demolition, excavation and earthmoving associated with the construction of new facilities have the potential to affect soil resources, the potential for impact is mitigated by operating within the confines of a National Pollutant Discharge Elimination System (NPDES) permit and stormwater pollution prevention plan (SWPPP) and through sound site design to limit erosion. These measures would ensure no appreciable loss in topsoil or excessive sedimentation reaching nearby drainages or watercourses.

Impacts from Increased Training Activities. Increased mounted vehicle maneuver training may result in increased soil erosion along unpaved roads and maintained trails in specific areas of the West and South ranges due to increased intensity of use within these areas. Also, the amount of land subject to potential increases in soil erosion would increase at the Fort relative to the No Action Alternative. Increased

training intensity could degrade the condition of training lands being used at the Fort unless mitigated as described below. These mitigation measures will substantially reduce the impacts to less than significant levels.

Preferred drainage pathways could develop along the compacted linear tracks left by military vehicles, creating increased erosion along unpaved roads and trails. The impacts of these changes are depends on the area of land area affected and intensity of training area utilization. Mitigation will reduce the impacts to less than significant levels.

Impacts from Seismic or other Geologic Hazards. The PA would not increase the potential for hazards associated with these conditions relative to the current baseline. The hazards associated with earthquakes at the Fort are considered less than significant because new structures would be designed to withstand the expected range of seismic disturbance.

Impacts Related to Conservation Easements. Accelerated soil erosion is apparent in and around the region at the present time. Improved land management practices directly related to the protection of land through conservations easements would result in improved perennial grass cover and reduced rates of erosion throughout the region.

### **3.3.2 Alternative One**

Soil loss and compaction from training activities, exposure to soil contaminants, or risk of exposure to seismic or other geologic hazards would be largely the same under Alternative One as under the PA. The additional site development across the Fort would not substantially increase adverse impacts associated with these resources. Impacts to soil and geologic resources would be less than significant under this alternative.

### **3.3.3 Alternative Two**

Soil loss and compaction from training activities, exposure to soil contaminants, or risk of exposure to seismic or other geologic hazards would be largely the same under Alternative Two as under the PA. Less site development across the Fort would occur under this alternative but would not substantially decrease adverse impacts associated with soil or geologic resources. Impacts to soil and geologic resources would have a less than significant impact on the human environment under this alternative.

### **3.3.4 Alternative Three**

The baseline of current conditions and training exercises at all of the facilities would continue under the no action alternative. The Army would continue to operate and maintain its range and training area facilities in order to meet its training mission requirement. Invariably, the level of training would change occasionally in response to this requirement, and, consequently, the impacts to soils on the Fort as a result of these changes might be altered as well. The level of use of the installation's training assets is not anticipated to significantly alter the physical character of the landscape itself due to the continued implementation of the Fort Huachuca INRMP, ITAM program, and East Range Watershed Improvement Rehabilitation Plan which address soils loss in training areas on the Fort.

### **3.3.5 Cumulative Impacts**

Soils management is a critical portion of the Fort's mission in providing realistic training environments to its soldiers and tenants. The Fort Huachuca INRMP outlines specific training land use restrictions, rehabilitation programs, and monitoring and impact tracking protocols that are meant to lessen the impact of military training on the soils at Fort Huachuca. An East Range Watershed Improvement Rehabilitation Plan was prepared in 2002 to address training and non-training related erosion on the East Range, and is currently being implemented, resulting in improvements in soil conditions through the construction of storm water containment and delivery infrastructure, road closures, prescribed fires, and root plowing and mesquite removal. Overall, improvements to soil conditions at Fort Huachuca have increased over the

past several years and are anticipated to continue into the future resulting in beneficial impacts on these resources.

### **3.3.6 Mitigation**

The potential for construction impact is mitigated through sound site design to limit erosion. For disturbances of one acre or more, a SWPPP is required prior to project implementation. The purpose of the plan is to minimize erosion through the use of Best Management Practices (BMPs). These BMPs will ensure that construction-related soil erosion is kept to a minimum and would ensure no appreciable loss in topsoil or excessive sedimentation reaching nearby drainages or watercourses.

The Army will continue to implement the Fort Huachuca INRMP, ITAM program, and East Range Watershed Improvement Rehabilitation Plan which address soils loss in training areas on the Fort. The Army will monitor the impacts of training activities to ensure that emissions stay within the acceptable ranges. The plan will also define contingency measures to mitigate the impacts of training activities that exceed the acceptable ranges for dust emissions or soil compaction.

## **3.4 HYDROLOGY AND WATER RESOURCES**

The potential for adverse impacts to this resource area can include direct changes due to proposed water consumption or discharge as well as potential surface or subsurface activities that could affect local or regional water quality or availability. Potential impacts to hydrology and water resources (surface water and groundwater) can be direct, indirect, short-term, or long-term. Adverse impacts on hydrology or water resources typically result when:

- The action alters the existing pattern of surface or groundwater flow or drainage in a manner that would adversely affect the uses of the water within or outside the project region;
- The action would be out of compliance with existing or proposed water quality standards or with other regulatory requirements related to protecting or managing water resources;
- The action would increase the hazard of flooding or the amount of damage that could result from flooding;
- The action produces concentrated storm water flows and/or runoff constituents that significantly degrade downstream surface water quality resulting in an adverse risk to health and human safety or ecological conditions;
- The action results in increased soil settlement or ground swelling that damages structures, utilities, or other facilities caused by inundation and/or changes in the groundwater level;
- The action results in grading or other construction activities that discontinue the function of existing drainage facilities or watercourses and can result in local and/or regional flooding that poses a threat to human health and safety or ecological conditions; or
- A usable groundwater aquifer for municipal, private, or agricultural purposes is adversely affected by depletion or contamination from the PA.

The ROI for groundwater includes the Sierra Vista subwatershed of the Upper San Pedro River Basin (USPB). The ROI for surface water extends downstream and beyond the boundaries of the Fort, encompassing areas that would be affected by the proposed physical changes on the Fort.

### **3.4.1 Proposed Action**

Impacts on Surface Water Quality from Construction. Short-term construction-related impacts on water quality could occur if storm water runoff were to come into contact with disturbed soils or exposed soil contaminants in construction sites, including road maintenance sites, and if the runoff then discharged to streams or other surface waters. This type of impact could occur at construction sites across the installation, but is expected to be less than significant because construction activities on sites involving

disturbance of areas greater than 1 acre (0.4 hectare) (which effectively includes all of the proposed construction projects), must comply with Phase 2 Storm Water Regulations (discussed above). Consequently, surface water quality impacts from construction activities at the Fort would be less than significant.

Impacts on Surface Water Quality from Chemical Residues or Spills. The PA is not anticipated to result in any increased risk of chemical residue spills on the surface soils that could affect the surface water quality at the Fort. Accumulation of chemical residues in surface soils or occasional spills that may occur during routine training activities has the potential to contribute to degradation of surface water quality. As with short-term construction-related sources, these may also be from non-point sources. As explained in Section 3.10 *Hazardous Wastes, Substances, and Materials*, the Army spill prevention and control plans reduce potential impacts associated with this type of threat to less than significant.

Impacts on Surface Water Quality from Non-point Source Sediment Loading from Mounted Maneuver Training. Training activities under the PA are expected to result in an increase in mounted maneuver training compared to existing conditions. Of most concern are the major perennial streams that receive runoff from the Fort, including the Babocomari River to the north and San Pedro River to the east. An increase in sediment loading could occur across the Fort in training areas designated for such training activity. This increase in training activity would likely result in a minor increase in soil erosion along unpaved roads and trails on the Fort. The lack of perennial water features in the majority of these designated training areas reduces the potential for downstream sediment loading during or result from mounted maneuver training. Any increase in soil erosion (see Section 3.3 for an expanded discussion of potential soil erosion) is likely to produce a less than significant increase in suspended sediment in streams beds that could be affected by training activities. Soil erosion was discussed previously in Section 3.3 *Topography, Soils, and Geology*.

Increased Flood Potential. Flood hazard has been identified as a less than significant impact at the Fort (USAIC, FH 1999). The potential for flooding could increase if impermeable surface area increases significantly, reducing infiltration of storm water, generating more storm water runoff, or focusing or concentrating the discharge in a smaller area. The result could be more frequent flooding in areas that are already prone to flooding. In general, this is not expected to result in a significant impact because storm water collection systems would be designed to avoid these impacts.

Impacts on Groundwater Quality during Construction of Proposed Facilities. As described for surface water, chemical or fuel spills might occur during construction activities, resulting in chemicals seeping into the subsurface and eventually to groundwater. However, any spills that occur would be immediately cleaned up, and the depth to groundwater is great enough in the Fort area that contaminants would not reach groundwater rapidly, increasing the likelihood that surface spills would be addressed before they become a groundwater problem. Standard construction practices and materials would be used, resulting in no greater than usual potential for spills compared to other construction projects.

Impacts on Groundwater Quality from Operation of Proposed Facilities. Operating several proposed facilities would involve handling hazardous liquids or other chemicals or processing wastewater or other waste liquids. All facilities that generate hazardous wastes or that store hazardous materials would provide appropriately trained personnel to manage these materials. Hazardous materials are managed according to the Army's standard operating procedures and in compliance with state and federal requirements. Facilities would be designed with engineering controls, such as secondary containment, waste treatment facilities, automatic shutoff controls, and other systems, to reduce the potential for releases. If releases were to occur, they would be cleaned up. Implementing these procedures is expected to reduce the potential for impacts on groundwater to less than significant levels.

Impacts from Conservation Easements. In general, conservation easements that reduce development and manage for sustainability help preserve ecosystem health. Additional conservation easements within the subwatershed would result in beneficial impacts to surface and groundwater resources with the ROI and

1 in particularly the San Pedro River. Reduction in pumping for agricultural uses would help to maintain  
2 flows in the San Pedro River. The acquisition of conservation easements within the subwatershed would  
3 also likely indirectly benefit special-status species and their habitat through the preservation of  
4 contributions to base flow in the river.

5 Impacts from Groundwater Pumping. The PA would result in an increase of 335 personnel, accompanied  
6 by approximately 520 family members, for a population increase of approximately 855 individuals. Water  
7 use calculations that consider wastewater generation and recharge as well as off-post induced economic  
8 development and associated water use were used to identify the level of additional annual water use that  
9 could be associated with the PA. Based on this modeling, an additional (net) annual increase in water use  
10 of 140 acre feet would be attributable to personnel increases associated with the PA. An additional 5 acre  
11 feet (net) of annual water use could be generated by increased facility development and subsequent  
12 operation.

13 Fort Huachuca Policy 119 (29 April 2002) requires that any organization increasing its overall personnel  
14 strength in the Fort Huachuca area must mitigate the water use associated with these additional personnel  
15 and their family members. This mitigation policy also applies to contract employees working on the  
16 installation. Mitigation for large personnel increases (which by definition includes the PA) is required  
17 prior to the personnel increase or hiring action. Based on the continued implementation of Fort Huachuca  
18 Policy 119 and the successful mitigation of additional water pumping associated with the PA, impacts to  
19 water resources within the ROI are anticipated to be less than significant. The PA is not anticipated to  
20 prevent the Fort from meeting water use reductions outlined in the 2002 Biological Opinion (USFWS  
21 2001) for zero-balance by the year 2011.

#### 22 **3.4.2 Alternative One**

23 Alternative One would result in an increase of 950 personnel, accompanied by approximately 1,470  
24 family members, for a population increase of approximately 2,420 individuals. Based on modeling similar  
25 to that prepared for the PA (see above), an additional annual net increase in water use of 397 acre feet  
26 would be attributable to personnel increases associated with the PA. An additional 10 acre feet of net  
27 annual water use could be generated by increased facility development and subsequent operation.  
28 Adherence to Fort Huachuca Policy 119 and ongoing aggressive water management and mitigation  
29 measures will continue on Fort Huachuca and within the Sierra Vista subwatershed to offset any pumping  
30 increase on the installation associated with Alternative One. No significant impact is anticipated on the  
31 regional water resources from this alternative.

#### 32 **3.4.3 Alternative Two**

33 Alternative Two would result in an increase of 98 personnel, accompanied by approximately 152 family  
34 members, for a population increase of approximately 250 individuals. Based on modeling similar to that  
35 prepared for the PA (see above), an additional net annual increase in water use of 41 acre feet would be  
36 attributable to personnel increases associated with the PA. An additional 5 acre feet of net annual water  
37 use could be generated by increased facility development and subsequent operation. Adherence to Fort  
38 Huachuca Policy 119 and ongoing aggressive water management and mitigation measures will continue  
39 on Fort Huachuca and within the Sierra Vista subwatershed to offset any pumping increase on the  
40 installation associated with Alternative Two. No significant impact is anticipated on the regional water  
41 resources from this alternative.

#### 42 **3.4.4 Alternative Three**

43 No change in existing hydrology or water resource conditions would occur as a result of Alternative  
44 Three. No significant impact on hydrology or water resources is anticipated under this alternative.

### 3.4.5 Cumulative Impacts

The Sierra Vista subwatershed of the Upper San Pedro Basin is an extremely active area with respect to water resource management activities. Most of these efforts are intended to reduce stress on the local aquifer to reduce or prevent possible future impact on flows and habitat in the San Pedro NCA. Fort Huachuca has adopted and implemented a conservation strategy that has already reduced use by 1,300 acre feet of water per year since 1989, and is anticipating to save, recharge, and/or reuse as much as another 3,000 acre feet per year by 2009. On post conservation efforts include low water use landscaping, retrofitting with low water use fixtures, installation and use of waterless urinals, an aggressive leak-detection program, a restrictive landscape watering policy and enforcement, and an awareness education process. Other projects include effluent and urban runoff recharge, reuse of treated effluent for golf course and parade field watering, and retirement of agricultural pumping through purchase of conservation easements. Off-post efforts by members of the Upper San Pedro Partnership are anticipated to contribute to regional water management over the next decade.

The PA and alternatives in concert with other land and water conservation actions in the United States and Mexico portions of the USPB are expected to benefit riparian function in the Upper San Pedro River watershed. For more info on regional efforts, please visit the Upper San Pedro Partnership website, and review the Working Water Conservation Plan at <http://www.usppartnership.com/documents.html#consplan>

### 3.4.6 Mitigation

Fort Huachuca Policy 119 (29 April 2002) requires that any organization increasing its overall personnel strength in the Fort Huachuca area must mitigate the water use associated with these additional personnel and their family members. This mitigation policy also applies to contract employees working on the installation. Mitigation for large personnel increases (which by definition includes the PA and Alternatives One and Two) is required prior to the personnel increase or hiring action. Based on the continued implementation of Fort Huachuca Policy 119 and the successful mitigation of additional water pumping associated with the PA and alternatives, impacts to water resources within the ROI are anticipated to be less than significant.

The Army will implement design measures, and extend the existing spill prevention and response plan to all new lands and activities under the PA. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with increased training activities. The plan is available upon request. The Army will incorporate BMPs that will reduce runoff and sedimentation to aquatic environments in accordance with Clean Water Act (CWA) regulations for storm water runoff across the Fort. Mitigation design measures include, but are not limited to, hardening the roads, raising the elevation of the roadway to improve drainage, installing drainage ditches adjacent to roads to control water running on or off the road, and planting grasses to slow overland flow. The Army would choose the most practicable solution for the specific project or project area during design.

## 3.5 BIOLOGICAL RESOURCES

Impacts on biological resources could occur from facility construction or operation. Adverse impacts on biological resources (to include vegetation, wildlife and protected species) typically result when:

- The action results in a jeopardy to populations of a federally-listed species;
- The action results in the adverse modification of critical habitat;
- The action results in a substantial loss of a critical, yet limited, ecological constituent of significant importance to a federal threatened, endangered, or candidate species results from the action;
- The action produces regionally significant and long-term destruction or loss of high-quality sensitive floral resources that could result in long-term ecological damage or degradation; or

- The action results in the substantial interference with, or complete disruption, of a heavy-use wildlife movement corridor that results in a demonstrable and long-term adverse impact on regionally significant ecological constituents.

The ROI for biological resources includes Fort Huachuca and adjacent environs.

### 3.5.1 Proposed Action

Impacts from Human Activities. Human activities during construction and training can result in reduced wildlife use in undisturbed habitat adjacent to the project sites. This activity would include human use and associated noise at the Training Area sites as well as truck traffic and troops on the ground along the MRC. Also, truck traffic along the MRC would generate dust which can settle on plants and block photosynthesis, respiration, and transpiration and can alter plant community structure (Tromculak and Frissell 2000). Human disturbance at the project sites could result in wildlife avoidance of adjacent habitat. The area of functional habitat loss adjacent to development can vary with species and the degree of avoidance is generally reduced with increasing distance from the development up to a point where there no longer is functional habitat loss. Species that have adapted to living in and near areas of human development would be much less affected than more development sensitive species.

For the purposes of this analysis, it is assumed that functional habitat loss for bird species that are sensitive to development and large mammals such as mule deer would be approximately 650 feet from the edge of the development or road margin for the MRC (Bock et al 1999, Forman 2000, Rost and Bailey 1979). Although the route used for the MRC is an existing dirt road there is assumed to be little functional habitat loss along the existing road because of infrequent traffic which is confirmed by Helzer (1996) who found that infrequently used dirt roads had no effect on the grasshopper sparrow. Under the PA, it is anticipated that exercises along the MRC, which includes mounted and dismounted training, would occur frequently.

An estimated 875 acres of grasslands around the sites would undergo functional habitat loss including 105 acres at Training Area Juliet, 100 acres at Training Area India, 93 acres at Training Area Victor, and 577 acres along the MRC. As indicated above, this loss would apply to species that are sensitive to human development and these species would continue to use this area but at a reduced frequency in relation to habitat outside the 650-foot zone. This would include breeding bird species of conservation concern (Botteri's, Cassin's, and grasshopper sparrows). Bock et al (1999) estimated a 48 percent decrease in grassland nesting birds from the edge of human suburban development out to 200 meters (656 feet) compared to counts beyond 200 meters. Disturbance adjacent to suburbia (i.e. human and pet use, dumping, off-road vehicle use etc) would be greater than at the Fort Huachuca project sites where use outside of the project area would be greatly restricted. Information on the effects of different types of human disturbance on birds was not found although Ward (1976) found that elk (*Cervus canadensis*) use was 14 percent lower along interstate highways than secondary roads. Using this, it is assumed that functional habitat loss may be closer to 34 than 48 percent. The average number of these three species per acre on Fort Huachuca was 3.2 birds per acre (Aid 1990). A 34 percent reduction would result in 2.1 birds per acre in the 770 acres of grasslands (does not include 105 acres at TA Juliet that already receives human disturbance) under going functional habitat loss. An estimated 128 acres of oak woodlands would also undergo functional habitat loss including 59 acres at Training Area Lima and 69 areas at Training Area Papa.

In general, it is expected that the lesser long-nosed bat would use the 650-foot functional habitat loss zone around the project features at current levels because there would be no nighttime training at sites within the Agave Management Plan area between July 1 through October 31 (Training Area India, Training Area Lima, and part of the MRC) or along the remaining part of the MRC not in the agave management area. This restriction would not apply to Training Area Juliet but operations at this site would be largely administrative and would not involve outdoor training exercises. However, some activities may take place during when the bats are foraging. There appears to be little information regarding the effects of human

development on lesser long-nosed bat foraging behavior. Anecdotal information indicates this species will forage in areas of human development because it often visits hummingbird feeders in developed areas (Lee and Clark 1993). Nighttime training at the Training Area Papa site would be infrequent so bat foraging in the 69 acres around this site would likely be unaffected. This indicates there would be little or no indirect effects to this species from human activity at the project sites. It is concluded that indirect impacts related to human activity at the project sites may affect but are not likely to adversely affect the lesser long-nosed bat.

The Mexican spotted owl may occur only infrequently in the open oak woodlands that surround the Training Area Lima and Training Area Papa sites and the proposed activities would have little effect on this species in this habitat. Therefore, the indirect effects of human activity on habitat adjacent to the project sites may affect but are not likely adversely affect the Mexican spotted owl. Increased human activities at Fort Huachuca are not anticipated to result in any significant impact to special-status species.

Impacts from Increased Potential of Fire. Various studies have shown that grasslands will recover from fires in 2 to 4 years (Finberg 1994, Bock and Bock 1992, Martin 1983) and at least some of the shrubs and trees growing in grasslands are fire tolerant such as velvet mesquite which is very fire tolerant (Bock and Bock 1992, Martin 1983). Another example is sotol where a 75 percent reduction in cover from a fire was noted. However, sotol sprouted from the terminal buds in lightly and moderately burned areas and regained most of its cover after 3 years (Ahlstrand 1982).

In general, fire has short-term negative effects on some species of wildlife and positive effects on others. The flora and fauna of grasslands and oak woodlands plant communities on Fort Huachuca have evolved with fire and the natural fire frequency in grasslands is estimated to be 10 to 15 years (Howell and Robinett 1995). The development and training at the project sites have the potential to cause an increase in fire frequency which could have a detrimental effects on plants and wildlife. Measures that would be taken to prevent and suppress training related fires are discussed in Section 3.12. These measures include (USAGFH 2001b):

- No off-road travel on South and West ranges;
- No pyrotechnics within 0.25 mile of agave management areas (this would include the Training Area India and Training Area Lima sites and part of the MRC);
- All fires would be actively suppressed;
- No use of training and test sites by personnel on foot unless activity has a range control approved fire suppression plan and appropriate fire fighting equipment is available; and
- No seeding or planting of nonindigenous grasses or other plants that may alter fire frequencies in wildland areas.

There is also a potential for an increase fire frequency at the Training Area Papa site due to training activities and therefore potential for adverse impact to Mexican spotted owl habitat adjacent to the site. The fire prevention and suppression measures listed above would also be in effect at this site and would help reduce the potential for a training related fire from burning in the oak woodlands adjacent to the site. The increased potential of fire at the Fort due to the PA is not anticipated to result in any significant impact to biological resources.

Impacts of Facility Construction and Operation. Fifty-two acres of grasslands and 11 acres of oak woodlands would be lost to development. Ten acres at Training Area Juliet is marginal habitat because of existing land disturbance and human activity. The remaining habitat is of higher quality because of low levels of human activity. Training Areas Lima and Papa are in oak woodlands and every effort would be made to leave these trees in place (32 oaks at Training Area Lima and 23 oaks and oak clumps at Training Area Papa). The effects of development on 52 acres would result in the degradation of wildlife habitat and, for some less mobile species, direct mortality. The effects of human development on various groups

of wildlife have been documented (Bolger et al 1997, Crooks 2002, Germaine and Wakeling 2000, Germaine et al 1998, Grindler and Krausman 2001, Mills et al 1989, Tweit and Tweit 1986). Information from these studies indicates that reptile, bird, and mammal species diversity would be greatly reduced in developed areas and species that have adapted to human development would dominate. For example, of 16 bird species that would likely nest in the grasslands on Fort Huachuca (Aid 1990, Lloyd et al 1998, Maure 1985) it is estimated that only six would likely nest in the developed areas which is a 63 percent reduction in grassland breeding bird species diversity.

The lesser long-nosed bat could be affected at the grassland sites from the elimination and degradation of potential foraging habitat. All of Training Area India and Training Area Lima as well as 1.1 miles at the southern end of the MRC are in the northern most Agave Management Plan area. There are scattered agave in Training Area Juliet and the lesser long-nosed bat likely forages in this general area (USFWS 2002b). This site is not in an Agave Management Plan area and a few agave may be eliminated during project construction. Palmer agave were widely scattered throughout the Training Area India site and construction activities here may result in the elimination of some of these plants. There were no agave observed at the Training Area Lima site. Agave were scattered along most of the MRC. Preconstruction surveys for Palmer agave would take place once the exact footprint of proposed facilities is known and marked on the ground. Consistent with the INRMP (USAGFH 2001b) and Programmatic Biological Assessment (USAGFH 2002), the following measures to protect agaves would be implemented:

- The amount of disturbed ground would be limited to the smallest area possible and agaves would be avoided where possible;
- Vehicle use in the construction zone would be limited to routes and areas of disturbance; and
- All workers would limit all activities and vehicle use to the designated construction area.

It is believed that some agaves would be eliminated by construction activities in Training Area Juliet and Training Area India. The potential loss of agaves along the MRC would be greatly limited because there is a certain amount of flexibility regarding the locations of turnouts and other project related structures so these plants could be avoided. However, dismounted training activities would mostly occur on the ground near the structures along the road at a few locations during training. This could result in the trampling of some small agave plants. In conclusion, implementation of the PA would result in the loss of 32 acres of grassland in potential lesser long-nosed bat foraging habitat (Training Area Juliet, Training Area India, and along the MRC) and the loss of some palmer agave plants. These losses may affect but are not likely to adversely affect the lesser long-nosed bat and are anticipated to be less than significant.

As indicated above, there are no records of the Mexican spotted owl from the Training Area Lima and Training Area Papa sites, and the open oak woodlands at each of these sites is marginal owl habitat which may, on rare occasions, harbor foraging or transient owls. For this reason, it is believe that the loss of this habitat may affect but is not likely to adversely affect the Mexican spotted owl.

No special-status plants or species are known or expected to occur on the parcels on which easements are purchased, however critical habitat for the Huachuca water umbel may be near the parcels. Reduction in pumping for agricultural uses may help to maintain flows in the San Pedro River. This may indirectly benefit the Huachuca water umbel in the river. The acquisition of conservation easements within the subwatershed is not anticipated to adversely affect any special status plant or wildlife species, though it would likely indirectly benefit these species and their habitat through contributions to base flow in the river.

### **3.5.2 Alternative One**

The exact locations and amount of land that would be impacted for site development projects under this alternative (see Section 2.1) are not known. Estimates indicate that over 70 acres of additional grassland habitat would be impacted by this alternative. In addition, there would also be the potential for an undetermined amount of ephemeral riparian habitat to be impacted. It is known that at least some of the

grasslands in question are relatively undisturbed and likely support a diverse complement of native flora and fauna.

Given that this alternative would result in the loss of more than twice as much the acreage of grasslands as then the PA (122 plus acres versus 52 acres), it is assumed that the direct impact to biological resources would be over twice as high. Additional habitat for mammals, reptiles and breeding birds would be lost directly by construction activities and indirectly in adjacent habitat from human activities. In addition, habitat used by wintering bird species would be impacted directly and indirectly.

The loss of 122 plus acres under this alternative would result in greater cumulative impacts to grasslands than the PA. These 122 acres represents a 7.1 percent increase in the projected cumulative loss of grasslands on Fort Huachuca at regional build-out, and a 1.2 percent increase in cumulative loss of grasslands in the subwatershed. Due to the unknown location of the proposed UAV L&R facility in Training Area Juliet, the unknown operational characteristics of the proposed UAV L&R facility in Training Area India, and the existence of the Agave Management Area on the West Range, the potential for significant impact as a result of increased UAV operations and facilities development on the West Range can not be determined at this time. Additional site-specific studies would be required once additional operational or facility location information is available.

### **3.5.3 Alternative Two**

The implementation of this alternative would include similar site development and training activities as described under the PA so the impacts of this alternative would be the same or less than those identified for the PA and less than significant.

### **3.5.4 Alternative Three**

None of the site development activities described in the PA and analyzed in section 3.5.3.1 would take place under No Action. Fifty-two acres of grasslands and 11 acres of oak woodlands would not be directly disturbed and the indirect effects of human activities and fire would not occur. There would be less than significant impacts to biological resources associated with this alternative.

### **3.5.5 Cumulative Impacts**

The cumulative impacts of human development and other factors (i.e. mesquite encroachment) on grasslands on Fort Huachuca and the surrounding subwatershed (664,500 acres; 1,038 sq. mi.) are in the process of being analyzed. Information from the preliminary analysis for this study is used here to assess the cumulative impacts on grasslands for this project.

The direct loss of 52 acres (.08 sq. mi.) of grasslands at the project sites was not factored into the loss of grasslands on Fort Huachuca and it represents an additional cumulative loss of grasslands on Fort Huachuca and in the subwatershed. It represents 0.03 percent of the grasslands in the subwatershed and 0.21 percent of the grasslands on Fort Huachuca. It represents a 0.51 percent increase in the loss of grasslands projected for the year 2020 in the subwatershed and a 0.06 percent increase in the loss by build-out. The loss of 52 acres at the project sites represents a 3.0 percent increase in the loss of grasslands on Fort Huachuca by the year 2020 and build-out.

The direct loss of 11 acres (.02 sq. mi.) of oak woodlands at the project sites was not factored into the loss of oak woodlands on Fort Huachuca and it represents an additional cumulative loss of oak woodlands on Fort Huachuca and in the subwatershed. The loss of 11 acres (.02 sq. mi.) of oak woodlands equates to a 0.13 percent increase in the loss of this habitat type in the subwatershed by 2020. On Fort Huachuca, the loss of 11 acres (.02 sq. mi.) is a 16.9 percent increase in the loss of oak woodlands by 2020.

### **3.5.6 Mitigation Measures**

The cumulative loss and fragmentation of grasslands in the Sierra Vista subwatershed represents a contribution to the ongoing regional loss of native grasslands which affects a wide range of common and

special status species. Individual projects on Fort Huachuca must comply with the Fort Huachuca INRMP for the protection of grasslands that provide lesser long-nosed bat foraging habitat and other functions. While these measures have helped minimize Fort Huachuca's contribution to the loss and fragmentation of grasslands in the region, further measures are required to ensure no further potential for adverse contribution to regional cumulative impacts on grasslands.

Goals and objectives for improved grassland resource management on Fort Huachuca were identified in 2004. Preliminary analysis concluded that future grasslands management on the Fort should be accomplished within an adaptive management framework such that implementation of successful recommendations would not conflict with the Army's military mission at Fort Huachuca. The accomplishment of the following goals and successful completion of relevant objectives would minimize and likely eliminate any effects of ongoing and proposed development activities at Fort Huachuca that could contribute to existing regional grasslands loss and fragmentation and resulting cumulative impacts:

- Goal #1.1 Special-Status Grassland Species. Conserve and/or restore populations of special-status grassland species on Fort Huachuca through recovery and management efforts, including the protection, conservation, and restoration of important grassland habitats.
- Goal# 1.2: Grassland Species of Concern. Conserve populations of grassland species of concern through management efforts, including the protection, conservation, and restoration of special interest area grassland habitats.
- Goal# 1.3: Grassland Wildlife Habitat. Conserve grasslands habitat capable of supporting viable populations of other important grassland wildlife species such as birds of conservation concern and game species.
- Goal# 1.4: Amend the Fort Huachuca INRMP. Amend the INRMP with additional grassland habitat-specific subsections and resource-specific goals and objectives to support ongoing, coordinated, and well documented adaptive grassland management.

The intent of these additional measures is to ensure that actions taken by the U.S. Army Garrison Fort Huachuca do not result in an adverse contribution to regional grassland loss and fragmentation and resulting cumulative impacts. The accomplishment of these goals and successful completion of relevant objectives would assure that ongoing and proposed actions and activities at Fort Huachuca would not adversely contribute to regional grassland loss and fragmentation.

### **3.6 HISTORICAL AND CULTURAL RESOURCES**

Cultural Resources are defined as prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, religious, traditional or other reasons. Impacts to cultural resources are caused by any alteration or effect on properties listed on, or recommended as eligible for, the National Register of Historic Places (NRHP). Typically, these impacts result from ground disturbing activities on the property but can also result from an intrusion in the viewshed or some other environmental disturbance. Impacts to cultural resources are considered to be significant if the proposed project or action will in any way alter the characteristics of a unique or culturally significant property. An adverse effect occurs if the proposed project or action diminishes the integrity of the property's location, design, setting, material, workmanship, feeling, or association. Adverse effects typically result when the action causes:

- The physical destruction, damage, or alteration of all or part of a culturally significant property;
- The isolation of a culturally significant property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;

- The introduction of visual, audible, or atmospheric elements that are out of character with the culturally significant property or altering its setting;
- The neglect of a culturally significant property resulting in its deterioration or destruction; or
- The transfer, lease, or sale of a culturally significant property.

### **3.6.1 Proposed Action**

The ROIs for this analysis are synonymous with the area of potential effect (APE) at each location as defined by regulations implementing the NHPA (16 USC §470f).

Impacts from Site Development. All of the APEs for site development were surveyed in October of 2004. No prehistoric or historic archaeological resources have been found within any of the subject APEs. Likewise no unique archaeological resources or human remains have been found within or adjacent to any of the APEs. It is unlikely that significant subsurface archaeological resources would be disturbed by site development associated with the PA.

No TCPs, resource procurement areas, tribal resources, tribal rights, or sacred sights have been identified during previous investigations and tribal consultations for the affected APEs. It is unlikely that any buried resources are present within any of the APEs that would be considered of cultural importance to Native American or other tradition-based communities. No historic buildings exist within any of the individual APEs.

Based on recent field investigations and supporting literature reviews (Desert Archaeology 2003) site development activities associated with the PA at Fort Huachuca are not anticipated to have any effect on properties listed on, or determined eligible for, the NRHP. Therefore no significant impact to historical or cultural resources at Fort Huachuca as a result of the PA are anticipated. Sufficient conservation measures are in place (see below) to account for the unlikely but potential discovery of archaeological resources during site excavation at the Fort.

Impacts from Increased Training Activities. A review of past surveys of existing training areas across the Fort and cultural resource management measures currently in place at the Fort suggests that increased training activities on existing ranges is not anticipated to affect any prehistoric, historic, or culturally significant resource. Consequently the proposed increase in training activities at the Fort is not anticipated to result in any significant impact on archeological or cultural resources at Fort Huachuca.

Impacts from Conservation Easements. No significant ground disturbance is anticipated from the acquisition of conservation easements within the subwatershed. The purchase and administration of conservation easements are anticipated to have beneficial impacts on preservation of these properties. Consequently no significant impact to cultural or historic properties is anticipated.

### **3.6.2 Alternative One**

Alternative One includes similar site development activities as those described under the PA. All of the APEs associated with the PA were surveyed in October 2004 with no findings (see above). Consequently site development associated with Alternative One that was previously evaluated under the PA is not anticipated to affect any cultural or historic resource or result in any significant impact.

Site development associated with the proposed new runway in the vicinity of LAAF, new UAV complex in Training Area Juliet and redevelopment of Demonstration Hill would occur in areas of previous disturbance and are identified as areas previously surveyed with no cultural or historic resources found (Desert Archaeology 2003; Fort Huachuca Cultural Resource GIS Database accessed October 2004). Additional site development associated with Alternative One is not anticipated to affect any cultural or historic resource or result in any significant impact.

### 3.6.3 Alternative Two

The potential for Alternative Two to affect known or unknown cultural or historic resources at Fort Huachuca is less than that described for the PA and consequently not anticipated to result in a significant impact on the human environment.

### 3.6.4 Alternative Three

No adverse impact to historical or cultural resource conditions is anticipated as a result of the No-Action Alternative. This alternative is not anticipated to contribute to any significant cumulative impact on historical or cultural resources. No additional mitigation or conservation measures are recommended.

### 3.6.5 Cumulative Impacts

The PA would not create the potential for significant cumulative effects to cultural resources, as cultural resources are rather site specific, and the PA and alternatives would not adversely impact regionally-significant cultural resources.

### 3.6.6 Mitigation

Prior to construction, the sites will be reviewed to determine whether any resources have been weathered out of the alluvium. If any resources that constitute potentially register-eligible sites, it will be necessary to conduct Section 106 consultations with the SHPO before construction.

To account for the unlikely but potential discovery of archaeological resources during site excavation at the Fort under the PA and Alternatives One and Two, the Army would brief the construction staff on procedures for handling the unexpected discovery of archaeological resources prior to undertaking project activities. If cultural resources or human remains were unearthed during construction excavations, the application of standard practices in accordance with the ICRMP would mitigate potential adverse impacts. In the event that human remains of Native American origin were discovered during project construction, compliance with the Native American Graves Protection and Repatriation Act regulations relating to discovery of human remains of Native American origin on Federal land is required (43 CFR 10).

## 3.7 TRANSPORTATION AND CIRCULATION

Potential impacts to transportation and circulation focus on key roadways and airspace in the ROI, including both regional and local transportation networks and air traffic congestion. Adverse impacts on transportation or circulation typically result when:

- Traffic or construction activities result in a substantial safety hazard to motorists, pedestrians, or bicyclists (military or civilian);
- Construction activities would result in the long-term or permanent restriction of one or more lanes of a primary or secondary arterial or intersection during peak-hour traffic, thereby cutting its capacity and creating significant congestion; or
- Congestion at LAAF and surrounding airstrips creates a situation where there is a significant increase in potential for collision between manned aircraft and UAVs.

This section addresses both ground and air transportation systems. The ROI for ground transportation includes the roadways in the region that serve as direct or mandatory indirect linkages between Fort Huachuca and surrounding communities and the local roads that access the cantonment area and training areas where proposed activities and development would occur. The ROI for aviation includes four areas of restricted airspace in the vicinity of the Fort: R-2303A, R-2303B, R-2303C, and R2312.

### 3.7.1 Proposed Action

Impacts to Ground Transportation. The PA would result in an increase in vehicular traffic both on and off the installation. This increased traffic would be due to an increase in personnel commuting to the installation from surrounding communities as well as an increase in the training areas on the installation.

The PA includes an increase in the use of range training areas. Access to portions of the range for non-training uses during scheduled training events could be limited. Some training areas within the ranges are currently operating at a high capacity. And proposed development of new facilities would alleviate the competition for these sites. Increased use of roads within the ranges would result in less than significant impacts.

Repair and refurbishment of small arms and weapons fire ranges on the South Range may include road improvements. Temporary construction-related impacts may occur but these impacts would be less than significant.

The cantonment area would experience additional traffic as a result of the PA. Additional personnel would travel installation roadways during peak hours as they commute to work. In addition, up to 75 acres of facility improvements within the cantonment area and LAAF are proposed. During the construction of these improvements, traffic may be impeded due to lane restrictions and construction zones and construction-related vehicles would occur. Construction areas would follow acceptable procedures to ensure vehicular, pedestrian, and bicycle safety during the construction period. These construction-related impacts would be temporary and are anticipated to be less than significant.

Increases in commuter traffic would be experienced in surrounding communities as a result of the increased number of personnel in the PA. Conservation easements would maintain status quo conditions on those parcels and would be unlikely to add any additional local or regional traffic impendence or congestion. Local areas would also experience a slight increase in traffic on occasion as military vehicle and POVs would be used to conduct rural and urban personnel training off the installation. The anticipated impacts to transportation and circulation in surrounding communities would be limited and less than significant.

Impacts to Airspace and Airspace Management. The PA would result in a increase in UAV flight operations, greatly increasing the demand on UAV airstrips and LAAF. Projected flight hours for FY 2005-2009 are provided in Table 3.7-1. These figures do not include all projections for FY 2008/2009 as they are not yet available, nor for National Guard requirements. The proposed activities would increase the congestion in the restricted airspace above and surrounding Fort Huachuca and place a greater monitoring and management burden on the LAAF tower.

While adding to airspace congestion, the proposed increases in UAV activities are not anticipated to result in a significant increase in potential for collision between manned and UAV aircraft. Increased hours of operation and ATC personnel will allow for the airspace use to be more distributed over the course of the day, and would allow for continued safe monitoring and management of the airspace. Overall, no significant impact to airspace management or circulation is anticipated as a result of the PA.

**Table 3.7-1 Projected UAV Launch and Recovery Operations**

FY	2004	2005	2006	2007	2008	2009
SEMA	n/a	3600	3600	3600	3600	3600
Shadow	n/a	2764	3652	3652	1876	1876
Hunter	n/a	6364	6364	6364	6364	6364
ER/MP UAV	0	0	2500	2500	2,500	2,500
Fire Scout UAV	0	0	0	0	1,250	1,250
Total Flight Hours	0	12,728	16,116	16,116	15,590	15,590

n/a = data not yet available

### 3.7.2 Alternative One

Impacts to Ground Transportation. Impacts to ground transportation resulting from the implementation of Alternative One would be similar to, but greater than, the PA. Traffic and potential congestion would be greater than the PA for all areas (range, cantonment area, and surrounding communities). Construction-related congestion and delays would occur to a greater degree than with the PA. These delays would be temporary and appropriate measures would be taken to ensure safety for vehicles, pedestrians, and bicyclists. Commuter traffic would also be greater both on the installation and in the surrounding communities due to increased personnel who would be stationed at the Fort.

New live fire ranges on the South and East Ranges are unlikely to pose significant impacts to ground transportation. While locations are not available, ranges would be mostly accessible from existing roads.

While the potential impacts associated with Alternative One would be greater than the PA, they are likewise anticipated to be less than significant.

Impacts to Airspace and Airspace Management. Alternative One proposes to restructure airspace designations. In order to restructure airspace designations, the FAA would have to conduct an aeronautical study of an airport proposal and, after consultations with interested persons, as appropriate, issue a determination to the proponent and advise those concerned of the FAA determination. The FAA determination does not relieve the proponent of responsibility for compliance with any local law, ordinance or regulation, or state or other Federal regulation. Aeronautical studies and determinations do not consider environmental or land use compatibility impacts (14 CFR 157). Such additional studies are beyond the scope of this programmatic EA and would have to be completed in the future, based on the specific restructuring proposal. The significance of any impacts that would result cannot be determined at this time.

Implementation of Alternative One would result in the construction of a new runway in the vicinity of LAAF and the improvement and extension and refurbishment of Demonstration Hill to further accommodate UAV activities. These improvements would reduce competition for LAAF and the other airstrips used for UAV activities, but potential conflicts between manned aircraft and UAVs in the airspace would still exist and would have to be carefully managed. The addition of new runways would not reduce the monitoring requirements of the ATC personnel as UAVs are monitored regardless of the runway or landing strip use. However, ATC personnel are capable of handling numerous aircraft at one time, and with appropriate scheduling of UAV activities, increased UAV operations would not necessarily overwhelm ATC's capabilities to monitor, separate, and guide aircraft safely.

Additional studies are necessary to fully determine whether the impacts associated with Alternative One would be significant.

### 3.7.3 Alternative Two

Impacts to Ground Transportation. Impacts resulting from the implementation of Alternative Two would be similar to, but less than, the PA. This alternative would result in one-half (500,000 gross square feet) the development within the cantonment area and LAAF that is called for in the PA. Reduced construction would result in fewer short-term traffic impacts associated with construction zones. Further, fewer personnel would be stationed at the Fort than with the PA, which would reduce potential impacts to cantonment area roads and in surrounding communities. Range use would be less than the PA, thereby reducing potential conflicts in use and need for maintenance of range roads and trails. Off-post, impacts would be similarly reduced. Less than significant impacts are anticipated as a result of Alternative Two.

Impacts to Airspace and Airspace Management. Under Alternative Two, UAV operations would be the same as those evaluated in the PA. The increasing number of ATC personnel and increasing hours of operation for the tower will help minimize potential congestion within the airspace. Less than significant impacts to airspace management would occur as a result of this alternative.

#### 3.7.4 Alternative Three

Under Alternative Three, the number of personnel would continue to increase as previously approved. Existing documentation has determined that the approved actions would not result in any significant impact to ground transportation or circulation (USAGFH 2001).

Under Alternative Three, UAV operations that have been previously approved (USAGFH 2000b) would continue to occur using existing infrastructure. The increasing number of ATC personnel and increasing hours of operation for the tower will help minimize potential congestion within the airspace. No significant impacts to airspace management would occur as a result of this alternative.

#### 3.7.5 Cumulative Impacts

While population and tourism in the area are growing, the infrastructure is growing as well. The PA and alternatives are not anticipated to result in severe traffic congestion or situations that pose a significantly increased risk to motorists, pedestrians, or bicyclists.

In the vicinity of the ROI, LAAF experiences the greatest volume of air traffic within its airspace and at the facility. Air traffic counts in 2003 were less than in 2001 (due to the relocation of the Predator UAV and cessation of commercial airline traffic) and have indicated a gradual increase from 2002. This upward trend in air traffic counts is primarily occurring within the military sector, as general aviation has actually decreased from 2001 to 2003. Air carrier traffic fluctuates somewhat as carrier services have been intermittent over the years (CEER 2004). Increased flight activity is anticipated in the future. Air traffic control staff are also increasing to accommodate these increases and ensure safe flight coordination. No significant cumulative impacts are anticipated to occur as a result of the PA or alternatives.

As other airports in the vicinity of the ROI improve facilities, more use could reasonably be expected. However, these communities are outside of restricted airspace where military operations occur. Further, flight plans must be established and filed prior to the flight and issues surrounding restricted airspace will have already been addressed. Local air traffic would not experience significant cumulative impacts.

Because the restructuring of restricted airspace at Fort Huachuca is in the early conceptual planning stages there is insufficient information to determine the extent and potential significance of its implementation. As a result, the cumulative effects to aircraft operations and airspace management associated with Alternative One remain unknown at this time. Implementation of the PA and alternatives two and three would increase aircraft overflight in areas underlying associated airspace; however, these increases would not result in significant cumulative impacts on airspace utilization or management.

### 3.8 AIR QUALITY

Potential impacts on air quality can be divided into short-term and long-term. Short-term impacts are usually associated with construction and grading activities, and long-term impacts are typically associated with build-out conditions. Most long-term emissions associated with the PA would be due to increased vehicle use. Adverse impacts on air quality typically result when:

- Proposed activities would release criteria pollutants that exceed Federal or State Ambient Air Quality Standards (AAQS) for pollutants adopted by the State of Arizona; or
- Proposed activities are not in conformity with Section 176 of the Federal Clean Air Act for federal actions.

The federal government has established ambient air quality standards to protect public health and welfare. Standards have been adopted for six criteria pollutants – ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), inhalable and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and airborne lead.

### 3.8.1 Proposed Action

General Conformity under the Clean Air Act, Section 176 has been evaluated for the PA according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to the PA because the project/action is an exempt action under 40 CFR 93.153(c) because Fort Huachuca is located in an area of attainment for all criteria emissions and the project/action is not considered regionally significant under 40 CFR 93.153(i). The following discussions represent a summary analysis of potential emissions in order for the reader to gain an understanding of the anticipated level of emissions associated with the PA and their relationship to the human environment.

Impacts from Site Development Activities. Facility development activities and the extension of utilities identified in the PA would result in a temporary increase in particulate and reactive organic gas (ROG) emissions due to earth moving activities and an increase in vehicle emissions associated with the transport of construction materials and workers. The use of dust control measures (wet suppression, paving, or chemical stabilization) would be employed during construction, thereby reducing dust emission.

The proposed construction activities within the cantonment area and on the ranges would either connect to a centralized boiler or be equipped with small (less than 1 million BTU) units. The addition of new boilers and heating units in the cantonment area is frequently offset by demolition of other facilities. Smaller units and connection to existing centralized boilers would not adversely affect the Fort's compliance with the terms reasonably expected when the State Air Quality Permit is issued. Appropriate notification of any new units would be given to ADEQ. If a larger unit is necessary, it would be determined if new emissions would be within the standards for Class II synthetic minor and modifications to the existing permit application would be necessary (Randee Sieracki, Personal Communication, 12 October 2004).

Access to developed facilities and increased use of the ranges for training would necessitate an increase in the use of unpaved surfaces and consequently an increase in PM<sub>10</sub> emissions. Likewise, the use of explosive devices contributes to PM<sub>10</sub> emissions. PM<sub>10</sub> emissions at the Fort are very low and no reporting requirements or limitations are currently in place.

While no mitigation is required, measures included in the PA help minimize air quality impacts. Utilities will be extended to locations where long-term electrical power is needed (see Section 3.13). This would eliminate the need for generators. New boilers and heating units would be small in capacity and offset by demolition as much as possible. As previously mentioned, dust control measures would be employed during construction activities.

Impacts from Increased UAV Activity. Increased UAV activity would result in increased ROG emissions. The majority of emissions occur during ground activities, launch, and recovery. Pollutants emitted at altitude are diluted and dispersed prior to reaching the ground and at that point are well below significant levels (USAGFH 2000b). Emissions associated with the proposed increases in UAV activity at the Fort are considered *de minimis* and less than significant.

Impacts from Conservation Easements. The creation of conservation easements would considerably reduce future growth and development with the easement lands. While intended to provide additional protection from noise-related encroachments and to provide a safety buffer to neighboring communities, the easement would not generate emissions, aside from some possible wind generated PM<sub>10</sub>. In this way, conservation easements have the potential to help contribute to reduced air quality emissions in the area.

No significant impacts to air quality are anticipated as a result of implementing the PA. In addition, the proposed activities are not anticipated to cause an increase in emissions that are limited by the anticipated Class II synthetic minor air quality permit for which the Fort has applied.

### 3.8.2 Alternative One

Potential impacts to air quality under Alternative One would be similar to but greater than the PA. This alternative includes up to 25 acres or 500,000 gross square feet more development within the cantonment area of the installation than the PA. These increases would contribute additional construction-related particulate and ROG emissions and a greater long-term impact associated with a larger number of people commuting to the Fort.

The additional UAV complex would be constructed on the West Range, contributing additional (although clearly *de minimis*) PM<sub>10</sub> and ROG emissions. New and refurbished live fire ranges on the South and East Ranges would contribute to PM<sub>10</sub> emissions as a result of both construction and long-term use. Actual emissions would depend on configuration and the level of earth moving required and would be subject to future studies and analysis.

This alternative includes increases in the number of personnel and students stationed at the Fort. Increased stationing would contribute to greater long-term vehicle exhaust emissions than the PA.

While development and use would be greater under this alternative, up to 30,000 acres of off-post property would be protected through conservation easements. As with the PA, areas that will not be developed or used would have the potential to help reduce emissions such as PM<sub>10</sub> or ROG.

While this alternative would increase the overall impacts to air quality, it is unlikely that these increases would result in the violation of ambient air quality standards. Under this alternative, the Fort would have to ensure that activities would not exceed limitations that would be set by the anticipated Class II synthetic minor air quality permit for which the Fort has applied or be willing to engage in the Title V permitting process. While additional analysis would be required when more determinant plans are available, it is unlikely that this alternative would result in any significant air quality impacts.

### 3.8.3 Alternative Two

The potential impacts associated with Alternative Two would be similar to but less than the PA. Reduced levels of construction, training and personnel would result in fewer overall emissions. Conservation easements could limit particulate emissions and ROG to a smaller degree (only 5,000 acres). No significant impact to air quality is anticipated.

### 3.8.4 Alternative Three

Under Alternative Three, the use and development of Fort facilities that have already been approved would continue into the future. The potential impacts associated with these approved developments and uses have already been determined and are not significant.

### 3.8.5 Cumulative Impacts

Communities surrounding Fort Huachuca are growing. Despite this growth, the area lacks large pollution sources (i.e. dense population centers or large industry) and the ambient air conditions are conducive to spreading what emissions are generated. The air quality in this area is not approaching or significantly contributing to existing non-attainment areas. The cumulative impact to air quality as a result of the PA or alternatives is not anticipated to be significant.

## 3.9 NOISE

Noise, or unwanted sound, is measured in decibel (dB) units. Noise measurements are often adjusted to more accurately reflect what the human ear perceives, and these units are called A-weighted sound level (dBA). Both noise and receptor sensitivity to noise varies by the time of day, with receptors being more sensitive at night.

Potential impacts from noise can be divided into short-term and long-term. Short-term impacts are usually associated with construction and grading activities, where long-term impacts are associated with

operational activities. The majority of the long-term noise level increases will be attributable to increased aircraft use in the ROI. Criteria for the assessment of noise impacts are based on established Land Use Compatibility Guidelines established by the Federal Interagency Committee on Noise (FICUN) 1980, *Guidelines for Considering Noise in Land Use Planning and Control* and the FICUN 1992: *Federal Agency Review of Selected Airport Noise Analysis Issues*. The signatories of these sources of criteria include DoD, Department of Housing and Urban Development (HUD), EPA, FAA, and Veterans Administration. These agencies are in substantial agreement concerning the levels and characteristics of noise from different sources on a wide variety of human activity and land use. Adverse impacts on the human environment as a result of noise typically result when:

- Impulse or other short-term event noise levels would be likely to cause significant annoyance to more than 15% of exposed individuals at locations accessible to the general public (the underlying context for DOD noise guidelines);
- Activities result in frequent noises at very high levels (e.g., blasts with C-weighted sound exposure levels in excess of 110 dB) in areas not already designated for such activities; or
- Activity-generated noise emissions expose sensitive off-site receptors to new noise levels in excess of the 65 dB day-night decibel measurement (Ldn).

The ROI for noise is comprised of Fort Huachuca and the areas adjacent to and surrounding the Fort boundary.

### **3.9.1 Proposed Action**

Noise from Construction Activities. Numerous construction projects would occur at various locations on the Fort under the PA. Individual items of construction equipment typically generate noise levels of 80 to 90 dBA at a distance of 50 feet (15 meters). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. Locations more than 1,000 feet (305 meters) from construction sites seldom experience significant levels of construction noise. No noise-sensitive land uses are known to be close enough to proposed construction sites to result in significant noise impacts. A limited amount of family housing at the Fort may be close enough to the potential development areas to experience a brief period of audible construction noise. The limited exposure to daytime construction noise is considered a less than significant impact.

Noise from Military Vehicle Use. Military vehicles will continue to use a mixture of public roads, on-post roads, and military vehicle trails. Vehicle convoys using public roads are typically limited to no more than 24 vehicles in a group. Vehicles within a convoy group (also called convoy serials) typically are spaced about 165 to 330 feet (50 to 101 meters) apart. Convoy serials generally are spaced at least 15 to 30 minutes apart. These convoy procedures prevent situations where convoy vehicles dominate local traffic flow for significant periods of time. Consequently, noise from vehicle convoy activity is a less than significant impact.

Training activities also include vehicle travel along military vehicle trails and on-post unpaved roadways such as the proposed MRC in Training Areas Hotel and Lima. Noise generated by this type of vehicle activity is a combination of individual vehicle pass events and periods of more sustained vehicle traffic. Noise levels from individual vehicle pass vary with vehicle type and speed. Vehicle speeds would be relatively low on unpaved roads during vehicle maneuvers. Noise levels generated by HMMWVs and two-axle military trucks would be comparable to noise from medium trucks (about 65 to 70 dBA at 50 feet [15 meters]). Multi-axle heavy trucks would generate noise levels comparable to other heavy duty trucks (about 78 to 80 dBA at 50 feet [15 meters]). Peak pass noise levels would drop by 15 dBA at a distance of 500 feet (152 meters) from the travel path. There are no noise-sensitive land uses along the proposed MRC or along the network of on-post trails and roads designated for vehicle maneuver training. Consequently, noise from vehicle maneuver training is a less than significant impact.

1 Noise from Aircraft Operations. The PA would not result in any meaningful changes in noise conditions  
2 at LAAF. Increased use of aviation assets at the Fort would cause a minor increase in airfield vicinity  
3 noise levels, however, noise conditions in the vicinity of LAAF would continue to be dominated by  
4 existing fixed-wing manned flight operations. Overall changes in airfield vicinity noise levels would be  
5 minor.

6 Introduction of new UAV systems to the Fort would add an additional aircraft type to those currently  
7 using airspace over the installation. Because UAVs have relatively low noise generation and normally  
8 would be flown at altitudes above those used by helicopters and manned aircraft the potential for any  
9 noticeable change in noise environments at the Fort and in the ROI is remote. Consequently, noise from  
10 increased aircraft operations at the Fort is a less than significant impact.

11 Noise from Additional Weapons Discharge. Noise impacts from increase in frequency and hours of day  
12 use for the live fire ranges has been determined to result in a less than significant impact to the human  
13 environment in previous analysis (USAGFH 1999, USAGFH 2001). Due to the remote location of the  
14 majority of live fire ranges at the Fort, increased utilization of these ranges is not anticipated to result in  
15 any significant increase in noise contours of the ranges or noise conditions near the ranges. The increased  
16 firing of blank ammunition during dismounted cross-country maneuvering activities across the Fort  
17 would result in short-term and localized disturbances at the training sites and during training activities.  
18 Consequently, increased weapons discharges at the Fort are anticipated to result in less than significant  
19 impact on the human environment.

20 Noise from UAV Launch and Recovery Operations. The PA will result in increased noise levels at and  
21 around facilities where UAV activities occur due to aircraft generated noise, support equipment, and  
22 increased traffic to and from training and testing locations. In general, the operating noise levels from  
23 UAVs are relatively low due to the size of their engines. Once medium UAVs and large UAVs reach  
24 operational altitudes, they are difficult to hear from the ground; while small UAVs are often more audible  
25 due to their low flight altitudes, stealth is the overall goal of these aircraft and every effort is taken to  
26 minimize the noise they emit.

27 Three UAV runways (Rugge-Hamilton, former Pioneer and Hubbard) are a considerable distance away  
28 from the cantonment area of Fort Huachuca and from other heavily populated areas. Flying the aircraft  
29 over sparsely populated areas reduces the number of people exposed to any level of noise the UAV may  
30 generate. While the perceived noise may be an annoyance, the impact is not significant in terms of human  
31 health and safety due to the level of the noise and the brief duration of exposure.

32 Noise from Dismounted Training Activities. Noise levels from weapons firing and ordnance detonations  
33 under the PA would remain similar to baseline conditions. A slight increase in the utilization of the small  
34 arms live fire ranges and from dismounted unit and individual training could result, but due to the remote  
35 location of the ranges (on the south and west ranges) and lack of any nearby noise-sensitive land use,  
36 noise from increased live fire range utilization at the Fort is a less than significant impact.

37 Noise from Personal Vehicle Use. Total military and civilian personnel based at the Fort would increase  
38 slightly under the PA. This would not produce a significant noise impact from added personal vehicle  
39 traffic along off-post or on-post roadways.

### 40 **3.9.2 Alternative One**

41 Alternative One would require a greater amount of facility development within the cantonment area and  
42 LAAF than the PA. This additional development is anticipated to occur in previously disturbed or  
43 otherwise compatible locations. As noted in the discussion for the PA, noise-sensitive land uses would be  
44 far enough from construction sites to avoid significant noise impacts. Consequently, construction  
45 activities would have a less than significant noise impact under this alternative.

1 Military vehicle use, aircraft, helicopter, and UAV use, noise levels from dismounted training activities  
2 and noise from added personal vehicle traffic would be similar to PA. As would be the case for the PA,  
3 added personal vehicle traffic would have a less than significant noise impact under this alternative.

4 Insufficient information exists to determine the extent of impact from new live fire ranges on the South  
5 and West Ranges and associated weapons firing and ordnance detonation. Consequently it is not currently  
6 possible to determine the potential for significant impact associated with the construction and operation of  
7 new live fire ranges at Fort Huachuca. Additional studies are required to determine the level of noise  
8 impacts that these new ranges would produce and the potential for this noise to significantly impact the  
9 human environment.

### 10 **3.9.3 Alternative Two**

11 Alternative Two would require less facility development than the PA. Consequently, construction  
12 activities would have a less than significant noise impact under this alternative. Military vehicle and  
13 aircraft use, and noise levels from dismounted training activities and ordnance detonations, and noise  
14 from added personal vehicle traffic would be similar to PA.

### 15 **3.9.4 Alternative Three**

16 Noise conditions at the Fort would remain essentially the same as present conditions and would be a less  
17 than significant impact at the Fort and within the ROI.

### 18 **3.9.5 Cumulative Impacts**

19 There has been no routine monitoring of ambient noise conditions at Fort Huachuca, so data is not  
20 directly available for evaluating specific trends. In general, noise conditions in the vicinity of Fort  
21 Huachuca are not likely to have significantly changed in recent years because activity levels for major  
22 noise sources have not grown or declined significantly.

23 Cumulative noise impacts under the PA would stem primarily from ongoing use of LAAF and live fire  
24 firing ranges. The majority of military training activities on Fort Huachuca are too far removed from the  
25 City of Sierra Vista or nearby public lands to have any cumulative noise impacts under the PA.  
26 Consequently, in light of historic, ongoing, and reasonably foreseeable future actions, the cumulative  
27 noise impacts under the PA would be less than significant.

## 28 **3.10 HAZARDOUS WASTE, SUBSTANCES, AND MATERIALS**

29 Evaluation of the potential generation, use, or transport of hazardous materials and/or waste and its effect  
30 on public safety is based on both the potential for upset (accident) and the consequences of any project-  
31 related adverse event (negative effect associated with normal operations). Beneficial impacts may result  
32 from any direct or indirect safety improvements due to project implementation. Adverse impacts related  
33 to hazardous waste, substances and materials typically result when:

- 34 • The action results in the exposure of humans to unsafe levels of hazardous materials or hazardous  
35 waste leading to unacceptable risks to human health and safety;
- 36 • The action results in the generation of hazardous materials or hazardous waste in quantities or of  
37 a type that could not be accommodated by the current waste transportation or disposal system;
- 38 • The action results in an increase in likelihood of an uncontrolled release of hazardous materials  
39 that could contaminate soil, surface water, and groundwater resulting in a significant adverse risk  
40 to human health and safety or ecological constituents; or
- 41 • The action creates a situation involving endangerment or unusual risk to the health and safety of  
42 military personnel, visitors, nearby residents, and the general public off-site.

The ROI for hazardous materials confined to areas where activities listed in Section 2.0 would take place on the Fort.

### **3.10.1 Proposed Action**

Impacts from Construction Activities. The construction of the proposed facilities and site modifications under the PA are short-term and are not anticipated to generate unusual hazardous waste. Hazardous materials use is anticipated to be limited to construction adhesives and temporary on-site storage and use of fuel for construction equipment. The contractor will be required to collect and properly dispose of any oil leaks from construction. If unanticipated on-site hazardous substances are encountered during construction, activities will cease until appropriate remediation efforts are completed. Hazardous waste will be disposed of in accordance with EPA, ADEQ and Fort Huachuca regulations. There will be no significant impacts to public safety from hazardous material issues associated with this action.

Impacts from Facility Operation. The proposed facilities could store and use hazardous materials and generate small quantities of hazardous wastes during their operation. The storage and disposal of such materials and wastes would be in accordance with all applicable federal, state, and local regulations and guidelines. For example, the use and storage of ammunition and explosives at the sites would follow Army Regulation 385.64, U.S. Army Explosives Safety. Hazardous materials and wastes would not be of a type or quantity that could not be accommodated by the current waste management system at the Fort.

The increased use of fuels during field exercises and UAV activities associated with the PA has the potential to increase the likelihood of an uncontrolled release of hazardous materials that could contaminate soil, surface water, and groundwater and could expose the environment to unsafe levels of hazardous materials or hazardous waste if untreated. All applicable safety regulations will be followed to prevent an uncontrolled release. If a release occurs the Fort's Installation Spill Contingency Plan would be followed to prevent exposure to unsafe levels of hazardous materials or hazardous waste.

### **3.10.2 Alternative One**

Potential impacts are similar to those described for the PA. Hazardous materials and wastes would be of a type or quantity similar to that accommodated by the current waste management system at the Fort.

### **3.10.3 Alternative Two**

Potential impacts are similar to those described for the PA. Hazardous materials and wastes could be accommodated by the current waste management system at the Fort with no significant impact.

### **3.10.4 Alternative Three**

Under the No Action Alternative, the proposed activities would not occur, and most likely, the existing conditions will continue. Currently, there are no hazardous material issues and none are anticipated in the foreseeable future. Therefore, there will be no significant impact to issues surrounding hazardous materials with this alternative.

### **3.10.5 Cumulative Impacts**

Cumulative impacts from hazardous materials are generally site-specific or related to regional hazardous material transportation and disposal capabilities. Anticipated impacts resulting from the PA involving hazardous materials and waste would be less than significant and quite localized. Regional cumulative impacts are anticipated to be less than significant as cities and counties follow regulatory guidelines and best management practices for the handling and disposal of hazardous materials and wastes. The PA would follow all applicable federal, state and local regulatory guidelines and would not result in a contribution to significant impacts from hazardous material and waste handling, generation or disposal at the local or regional scale.

### 3.11 POPULATION, HOUSING AND ECONOMIC CONDITIONS

NEPA provides no specific thresholds of significance for socioeconomic impact assessment. Significance varies, depending on the setting of the PA (40 CFR 1508.27[a]), but 40 CFR 1508.8 states that indirect effects may include those that are growth inducing and others related to induced changes in the pattern of land use, population density, or growth rate.

Potential impacts on population, housing, and economic conditions can be determined by analyzing the proposed action's impact on population growth in the area. Adverse impacts on population, housing, and economic conditions typically result when:

- The action induces growth or concentrations of populations that exceed official regional population projections or that conflict with population projections in local or County plan;
- The action induces substantial growth in an area, either directly or indirectly (e.g., through projects in an undeveloped area or extension or major infrastructure);
- The action conflicts with housing projections and policies set forth in a local or County plan;
- The action generates student enrollment that exceeds the capability of responsible authorities to accommodate;
- The action displaces existing housing, especially affordable housing;
- The action disrupts or divides the physical arrangement of an established community; or
- The action causes a decrease in local or ROI employment.
- The action results in the increase of permanent party personnel to the Fort without having sufficient housing resources to accommodate the increase resulting in an adverse impact on the health and safety of military personnel and their families.

The primary socioeconomic ROI potentially affected by the PA and alternatives of this EA includes Fort Huachuca, Sierra Vista and Huachuca City. These three communities are the most likely to experience population and economic changes as a result of personnel being stationed at the Fort or living off-post.

#### 3.11.1 Proposed Action

Under the PA there would be an increase of 134 jobs in civilian employment and 201 jobs in military employment. It is estimated that 50 percent of the new civilian employees would relocate to the area. Using the 2002 average household size of 2.55 it is estimated that this would result in an increase of 683 persons to the population of Cochise County. Total estimated annual income of both new civilian and military personnel is \$14,753,534. This will be a direct long-term beneficial impact to the income of the area. In addition there would be an estimated increase in one-time local expenditures (primarily construction materials and related activities) of \$140,000,000 over a five-year period, which would also result in a beneficial long-term impact to the income of the area.

An estimated additional demand of 193 off-post housing units would be needed in the local area. The additional population and housing units could increase the local tax base of the area. Under the PA a total of 15,000 acres of off-post land would be protected through conservation easements. This will provide an initial short-term beneficial impact to income from the purchase of the easement and would maintain or increase tax revenue from the parcel if removed from agricultural production. Because the location of the easements and any follow-on land uses are not currently known it is not possible to more accurately estimate either the initial purchase cost of the acreage or the change to local tax base revenue.

Both individually and combined, activities associated with the PA are anticipated to result in a less than significant impact to local and regional economic and socioeconomic conditions.

### 3.11.2 Alternative One

Under Alternative One there would be an increase of 620 jobs in civilian employment and 330 jobs in military employment. There would be a total annual increase of \$46,222,220 to local income from the additional employment of both civilian and military personnel. In addition there would be a one-time increase of \$210,000,000 in local expenditures (primarily construction materials and related activities) over the next five years. This will create a beneficial long-term impact to the local area income and economy. Factoring in average family size there would be an increase of 1,632 persons to the local population and an estimated demand of 517 off-base housing units. The additional populations and housing units could create a long-term beneficial impact to the local tax base.

Under Alternative One, 25,000 acres would be protected through conservation easements. Because the locations of the parcels are not currently known it is not possible to estimate either the initial purchase cost of the acreage or the change in local tax base revenue. This alternative would result in the greatest increase to local area income, population, and demand for housing. There would be no disproportionately high and adverse effects on minority or low-income populations nor any disproportionately high and adverse environmental health and safety risks to children from the implementation of Alternative One.

Both individually and combined, activities associated with Alternative One are anticipated to result in a less than significant impact to local and regional economic and socioeconomic conditions.

### 3.11.3 Alternative Two

Under Alternative Two, 69 new civilian and 29 new military jobs would be created. This would result in a annual increase of \$4,860,286 to the local income of the area once positions are filled. In addition, it is estimated that this alternative would result in a one-time increase in expenditures of \$70,000,000. The additional incomes would create a beneficial long-term impact to the local income and economy. Factoring in average family size there would be an increase of 163 persons to the local population and an estimated demand of 53 off-base housing units. The additional population and housing units would increase the local tax base of the area. Also under this alternative, 5,000 acres would be protected through conservation easements. Because the locations of the parcels are not currently known it is not possible to estimate either the initial purchase cost of the acreage or the change in local tax base revenue. This alternative would result in the least amount of increase to local area income, population, and demand for housing. There would be no disproportionately high and adverse effects from the implementation of Alternative Two on minority or low-income populations. There would be no disproportionately high and adverse environmental health and safety risks to children as a result in Alternative Two.

Both individually and combined, activities associated with Alternative Two are anticipated to result in a less than significant impact to local and regional economic and socioeconomic conditions.

### 3.11.4 Alternative Three

Under Alternative Three there would be no foreseeable changes to Fort Huachuca's contribution to economic or socioeconomic conditions within the region.

### 3.11.5 Cumulative Impacts

Activities associated with the PA and alternatives are not anticipated to result in a significant cumulative impact to local economic or socioeconomic conditions. The growth and development of the greater Sierra Vista area is anticipated to continue unabated by activities at Fort Huachuca. The acquisition of conservation easements within the region would result in a long-term benefit to local and regional populations by providing additional open space and fewer development-related impacts (i.e. traffic congestion, air quality emissions, water pumping). Economic and socioeconomic conditions within the local and regional area appear stable and would not be largely affected by the PA and alternatives.

### 3.12 HEALTH AND SAFETY

Adverse impacts on health and safety typically result when:

- The demand for police, fire, or medical services exceeds the present and/or future capacity to serve resulting in unacceptable adverse risks to human health and safety; or
- If proposed changes create an inherently dangerous situation for military personnel or civilians at Fort Huachuca.

Fort Huachuca, Coronado National Forest, and the surrounding communities and services comprise the ROI for health and safety.

#### 3.12.1 Proposed Action

Impacts from Site Development Activities. The PA includes the development of new facilities within the range Training Areas. While none of the proposed improvements or associated training activities are inherently dangerous, measures are included in the PA to maximize safety. Facilities and developments proposed within Training Areas India, Papa, and Victor would be surrounded by 8 to 10 foot high chain link fencing topped with barbed wire to limit access to unauthorized personnel. These gated areas are locked when not in use and guarded when in use. Coordination of training exercises and other uses of the Training Areas through Range Control is anticipated to minimize conflicts of uses of the range. Where necessary to ensure safety, personnel and/or signs may be used to notify other users in the area of a training exercise underway. For example, the use of a traffic control device could be installed on roads in the vicinity of UAV launch or recovery operations in Training Area India. The proposed increases in dismounted cross-country pedestrian movement in Training Area Papa would be limited to staying below the ridge to ensure personnel remain clear of live-fire Range 13. Designs for refurbishment of live fire ranges within the South Range would follow all safety protocols.

Impacts from Personnel Increases. The proposed increases in urban and rural personnel training is non-intrusive and non-confrontational, and would not pose any risk or danger to the general public. While increased personnel and student loads could potentially lead to increased injuries, these increases would be within the existing facilities capabilities to serve.

Impacts from Conservation Easements. Conservation easements would provide a measure of safety to the surrounding communities by providing a buffer from aircraft activities and would result in a less than significant impact on the human environment.

Impacts from Potential Fire Risks. Minimizing the risk of fire on the training ranges is a priority. Any use of pyrotechnics would comply with the Range Regulations and Pyrotechnic SOPs. Per Range Control Regulations, vehicles would remain on roads and trails, within vehicle pull outs or in other authorized areas for vehicles, thereby minimizing the ignition of dry grass or brush that could otherwise come in contact with hot vehicles. Increased company-level cadre training would not include the use of field kitchens. Fueling activities would be conducted by Brigade assets and would follow all safety and fire management protocols. Should a fire occur as a result of any of the proposed training activities, immediate actions would be taken and all emergency plans and protocols would be followed.

Any proposed increase in training activities at the Fort however, must be evaluated within the context of existing fire suppression capabilities. Existing fire suppression capabilities at the Fort are insufficient to meet the growing demand for increased training area utilization across the installation. The potential for catastrophic fire is increased. Consequently, mitigation measures identified below are incorporated within the PA to reduce the impact from potential fire risks to a less than significant level.

Impacts from UAV Activities. The potential exists for a UAV to crash during testing and training activities. The UAV Crash/Incident/Mishap Investigation and Recover Plan directs actions following a mishap. While a mishap could occur, the potential for loss in or near populated areas is negligible, as

1 flight profiles do not traverse highly populated areas. Most UAV mishaps occur during take off and  
2 landing, both of which take place on the installation (USAGFH 2000b). In addition, UAVs do not carry a  
3 large enough fuel supply to pose a significant threat of fire should one crash (Peter Nussbickel, Personal  
4 Communication, 12 October 2004).

5 Airspace congestion associated with increased UAV flights could potentially lead to conflicts between  
6 UAVs and manned aircraft. Increased ATC staffing and hours of operation (see Section 3.7) would  
7 increase ATC's ability to manage the aircraft in flight and reduce the number of aircraft in the air at one  
8 time by spreading them out over the course of the longer hours of operation. ATC monitors all aircraft  
9 within the restricted air space regardless of which runway is used. Aircraft (UAV or otherwise) are  
10 directed to assure safe clearance between different aircraft flying at one time.

### 11 **3.12.2 Alternative One**

12 Additional studies would be necessary to determine the impact on health and safety associated with the  
13 increase in runways and the restructuring of airspace included in this alternative. Restructuring the  
14 airspace could affect the demand on ATC and an evaluation would be necessary to ensure adequate  
15 staffing of trained personnel would be available to accommodate the proposed changes in UAV activity.  
16 Additional conservation easements compared to the PA would increase the buffer between aircraft  
17 activities and the surrounding communities, improving safety to surrounding communities. A new or  
18 refurbished small arms and other live fire ranges would be designed, constructed and operated within  
19 existing protocols and regulations for ensuring safety to surrounding areas and within the range.

20 With additional development and use of the installation, fire suppression capabilities and crash response  
21 would require additional equipment and manpower than described in the PA, such as considerations for  
22 the South Range. These needs would have to be determined when the activities and developments are  
23 more specifically defined.

24 Any proposed increase in training activities at the Fort must be evaluated within the context of existing  
25 fire suppression capabilities. As described above, existing fire suppression capabilities at the Fort are  
26 insufficient to meet the growing demand for increased training area utilization across the installation. The  
27 potential for catastrophic fire is increased. Consequently, mitigation measures identified below are  
28 incorporated within the Alternative One to reduce the impact from potential fire risks to a less than  
29 significant level.

### 30 **3.12.3 Alternative Two**

31 Under this alternative new facilities would not be constructed within the ranges, and existing facilities  
32 would continue to be used. The increasing demand on the training areas and lack of new facilities  
33 increases the likelihood of conflict in use within the range. These use conflicts would continue to be  
34 managed by Range Control. UAV flights would be the same as in the PA but occur using existing  
35 facilities. Fire suppression and crash response capabilities would need to increase as described in the PA.  
36 Conservation easements, while limited compared to the PA and Alternative One, would provide a  
37 measure of safety to the surrounding communities by providing a buffer from aircraft activities. As with  
38 the PA, fire suppression and crash response capabilities at the Fort need to be increased to adequately  
39 meet existing and future needs. This mitigation is listed below.

### 40 **3.12.4 Alternative Three**

41 Alternative Three maintains the status quo and previously approved activities would continue. A new fire  
42 station on the West Range and increasing crash response capabilities at LAAF are currently needed.  
43 Designs for a new West Range fire station are being reviewed. Heavy demand for existing training  
44 facilities would continue under this alternative, but these issues would continue to be managed by Range  
45 Control. UAV flights would continue to increase as previously approved, contributing to airspace  
46 congestion. Increases in ATC personnel and hours of operation are anticipated to reduce some of the

potential risk and be able to meet the demand generated by increases in aviation activities. As with the PA, upgrades to fire suppression and crash response capabilities are needed to avoid a significant impact.

### **3.12.5 Cumulative Impacts**

While fire suppression and crash response capabilities are deficient at the Fort, these impacts are localized to the installation. Police, medical, and fire suppression capabilities in the surrounding communities would not be overwhelmed or significantly affected by the PA or any of the alternatives. None of the alternatives (including the PA) would create an inherently dangerous situation for people on or off the installation. As surrounding communities begin to attract more fly-in tourism, local airports are making improvements. For example, the Benson Municipal Airport recently completed a new million-dollar taxiway and parking aprons and is constructing private hangars (CCCER 2004). However, given that UAVs are used within the restricted airspace, a cumulative impact is not anticipated. Restructuring of airspace considered in Alternative One could potentially have an impact on surrounding airports. The FAA and proponents would study potential impacts associated with such restructuring prior to any actions being taken. Restructuring aside, no significant cumulative impacts are anticipated.

### **3.12.6 Mitigation Measures**

Fire suppression and crash response capabilities at the Fort need to be increased to adequately meet existing and future needs. An additional fire station on the West Range near the UAV complex and extensions to the LAAF fire station would help meet the existing needs and the potential needs that increased range and UAV activities would generate. Needs identified to ensure adequate suppression capabilities include one structural fire fighting apparatus, one wildland fire fighting apparatus, one 4 wheel drive ambulance, additional firefighters of required rank/certification, increased crash truck capabilities, and peripheral requirements (salary, protective clothing, hoses, nozzles, beds, office furniture, etc) (Chief Saenz, Personal Communication, 30 September 2004).

## **3.13 UTILITIES AND SERVICES**

Adverse impacts on public services, utilities or energy typically result when:

- A resource exceeds its present and/or future capacity to serve the local community which jeopardizes human health and safety; or
- A significant and long-term increase in annual energy consumption or peak potential loading is calculated to exceed the capacity of the transmission lines and transformers jeopardizing the ability of the utility to service the local community.

The ROI for this resource area includes the area surrounding the sites proposed for development and the utility infrastructure and providers of the Fort.

### **3.13.1 Proposed Action**

The public services and utilities at the Fort would be capable of incorporating the increased demands associated with the development and operations under the PA. There may be temporary interruption in services to surrounding facilities while connections are made. No long-term interruption of service is anticipated. These interruptions are not considered significant.

Impacts on Sanitary Sewer System. A minor increase in wastewater generation would be expected as a result of the development in training areas Juliet and India and the cantonment area and LAAF. This increase is not anticipated to result in any significant contribution to sanitary sewer capabilities in the area. The WWTP is currently operating at 38% of total capacity. The other sites will be served by portable facilities. No significant impact on the sanitary sewer system on the Fort is anticipated.

Impacts on Solid Waste Generation. Solid waste quantities would increase with the operations and additional personnel located at the Fort under this action. The waste will be disposed in landfills which

are Arizona Department of Environmental Quality approved for the type of solid waste generated. No significant impact on solid waste disposal or to local landfills is anticipated as a result of the PA.

Impacts on Energy Consumption. While energy uses at Fort would increase, these increases would not exceed the capacity of the transmission lines or transformers. The design of new facilities incorporates energy conservation features such as building insulation, low energy lighting, efficient heat and cooling controls, energy-saving water heaters and appliances, and optimum use of natural ventilation and lighting. Utilities will be connected to sites via existing utility and roadway alignments. No significant impact on energy systems is anticipated as a result of the PA.

### **3.13.2 Alternative One**

Potential impacts are similar to those described for the PA. Additional utility usage would occur as a result of the additional square footage of development in the cantonment area, construction of an additional UAV facility, and the additional personnel stationed at the Fort. This additional utility usage is not anticipated to be significant, or cause any utility to exceed its present and/or future capacity to serve. No significant impact to public utilities or services is anticipated.

### **3.13.3 Alternative Two**

Alternative two is similar to PA with the exception that there would be less square footage developed in the Cantonment/LAAF area and less personnel stationed at the Fort. The potential impacts on utilities would be slightly less than that of the PA. No significant impact to public utilities or services is anticipated.

### **3.13.4 Alternative Three**

No change in existing public services or utilities would occur. No impact on public services or utilities is anticipated.

### **3.13.5 Cumulative Impacts**

No cumulative impacts to public services, utilities or energy resources are anticipated to occur as a result of the PA or alternatives.

## **3.14 ADDITIONAL AREAS OF CONSIDERATION**

### **3.14.1 Environmental Justice**

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations* (1994), directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental impacts of their program, policies, and activities on minority or low income populations in the surrounding community. The PA is not anticipated to create any high or adverse human health or environmental impact on minority or low income populations in the surrounding areas. The PA and alternatives are not anticipated to result in any significant impacts to human health or safety to any population.

### **3.14.2 Protection of Children from Environmental Health and Safety Risks**

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (1997), recognizes a growing body of scientific knowledge that demonstrates that children may suffer disproportionately from environmental health risks and safety risks. The PA and alternatives are not anticipated to result in any disproportionate environmental health risk or safety risk to children.

### **3.14.3 Farmlands**

The Farmland Protection Policy Act (FPPA) of 1981 (7 USC 4201 et seq.) was written to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent

practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland. The PA and alternatives is not anticipated to result in the loss of any farmland. If the areas to be included in proposed conservation easements are determined to include farmlands, subsequent analysis pursuant to the FPPA would be required.

### **3.15 SUMMARY OF MITIGATION MEASURES**

#### **3.15.1 Soils**

While excavation and earthmoving associated with construction of new facilities have the potential to affect soil resources, the potential for impact is mitigated by each contractor operating within the confines of a NPDES permit and SWPPP and through sound site design to limit erosion. For disturbances of one acre or more, a SWPPP is required prior to project implementation. The purpose of the plan is to minimize erosion through the use of BMPs. These BMPs will ensure that construction-related soil erosion is kept to a minimum. BMPs would be specifically designed to control the amount and velocity of runoff and its ability to carry sediment (soil) by diverting incoming flows. BMPs also include sediment traps to retain sediment on the project site. These measures would ensure no appreciable loss in topsoil or excessive sedimentation reaching nearby drainages or watercourses.

The Army will continue to implement the Fort Huachuca INRMP, ITAM program, and East Range Watershed Improvement Rehabilitation Plan which address soils loss in training areas on the Fort. The plans will continue to address measures such as, but not limited to, restrictions on the timing or type of training during high risk conditions, vegetation monitoring, soil monitoring, and buffer zones to minimize dust emissions in populated areas. The plan will continue to determine how training will occur in order to keep fugitive dust emissions below CAA standards for PM10 and soil erosion and compaction to a minimum. The Army will monitor the impacts of training activities to ensure that emissions stay within the acceptable ranges, as predicted, and that environmental problems do not result from excessive soil erosion or compaction. The plan will also define contingency measures to mitigate the impacts of training activities that exceed the acceptable ranges for dust emissions or soil compaction.

#### **3.15.2 Water Resources**

Fort Huachuca Policy 119 (29 April 2002) requires that any organization increasing its overall personnel strength in the Fort Huachuca area must mitigate the water use associated with these additional personnel and their family members. This mitigation policy also applies to contract employees working on the installation. Mitigation for large personnel increases (which by definition includes the PA) is required prior to the personnel increase or hiring action. Based on the continued implementation of Fort Huachuca Policy 119 and the successful mitigation of additional water pumping associated with the PA, impacts to water resources within the ROI are anticipated to be less than significant.

The Army will implement the existing spill prevention and response plan to all new lands and activities under the PA. The Army will fully implement this plan for all existing and new training areas to reduce the impacts associated with increased training activities. The plan is available upon request. The Army will incorporate BMPs that will reduce runoff and sedimentation to aquatic environments in accordance with CWA regulations for storm water runoff across the Fort.

The Army proposes to implement design measures in accordance with Army design standards to reduce potential soil erosion and sediment loading impacts to the Babocomari River and San Pedro River. Mitigation design measures include, but are not limited to, hardening the roads, raising the elevation of the roadway to improve drainage, installing drainage ditches adjacent to roads to control water running on or off the road, and planting grasses to slow overland flow. The Army would choose the most practicable solution for the specific project or project area during design.

### 3.15.3 Biological Resources

The cumulative loss and fragmentation of grasslands in the Sierra Vista subwatershed represents a contribution to the ongoing regional loss of grasslands which affects a wide range of common and special status species. Individual projects on Fort Huachuca must comply with the Fort Huachuca INRMP for the protection of grasslands that provide lesser long-nosed bat foraging habitat and other functions. While these measures have helped minimize Fort Huachuca's contribution to the loss and fragmentation of grasslands in the region, further measures are required to ensure no further potential for adverse contribution to regional cumulative impacts on grasslands.

Goals and objectives for improved grassland resource management on Fort Huachuca were identified in 2004. Preliminary analysis concluded that future grasslands management on the Fort should be accomplished within an adaptive management framework such that successful implementation of recommendations would not conflict with the Army's military mission at Fort Huachuca. The accomplishment of the following goals and successful completion of relevant objectives would minimize and likely eliminate any effects of ongoing and proposed development activities at Fort Huachuca that could contribute to existing regional grasslands loss and fragmentation and resulting cumulative impacts:

- Goal #1.1 Special-Status Grassland Species. Conserve and/or restore populations of special-status grassland species on Fort Huachuca through recovery and management efforts, including the protection, conservation, and restoration of important grassland habitats.
- Goal# 1.2: Grassland Species of Concern. Conserve populations of grassland species of concern through management efforts, including the protection, conservation, and restoration of special interest area grassland habitats.
- Goal# 1.3: Grassland Wildlife Habitat. Conserve grasslands habitat capable of supporting viable populations of other important grassland wildlife species such as birds of conservation concern and game species.
- Goal# 1.4: Amend the 2001 Fort Huachuca INRMP. Amend the 2001 INRMP with additional grassland habitat-specific subsections and resource-specific goals and objectives to support ongoing, coordinated, and well documented adaptive grassland management.

The intent of these additional measures is to ensure that actions taken by the U.S. Army Garrison Fort Huachuca do not result in an adverse contribution to regional grassland loss and fragmentation and resulting significant cumulative impacts. The accomplishment of these goals and successful completion of these objectives would assure that ongoing and proposed activities at Fort Huachuca would not adversely contribute to regional grassland loss and fragmentation.

### 3.15.4 Cultural Resources

Prior to construction, the sites will be reviewed to determine whether any resources have been weathered out of the alluvium. If any resources that constitute potentially register-eligible sites, it will be necessary to conduct Section 106 consultations with the SHPO before construction.

To account for the unlikely but potential discovery of archaeological resources during site excavation at the Fort under the PA and Alternatives One and Two, the Army would brief the construction staff on procedures for handling the unexpected discovery of archaeological resources prior to undertaking project activities. If cultural resources or human remains were unearthed during construction excavations, the application of standard practices in accordance with the ICRMP would mitigate potential adverse impacts. In the event that human remains of Native American origin were discovered during project construction, compliance with the Native American Graves Protection and Repatriation Act regulations relating to discovery of human remains of Native American origin on Federal land is required (43 CFR 10).

### **3.15.5 Health and Safety**

Fire suppression and crash response capabilities at the Fort need to be increased to adequately meet existing and future needs. An additional fire station on the West Range near the UAV complex and extensions to the LAAF fire station would help meet the existing needs and the potential needs that increased range and UAV activities would generate. Needs identified to ensure adequate suppression capabilities include one structural fire fighting apparatus, one wildland fire fighting apparatus, one 4 wheel drive ambulance, additional firefighters of required rank/certification, increased crash truck capabilities, and peripheral requirements (salary, protective clothing, hoses, nozzles, beds, office furniture, etc) (Chief Saenz, Personal Communication, 30 September 2004).

## 4 FINDINGS AND CONCLUSIONS

Based on the analysis, it is the conclusion of this EA that neither the PA, Alternative Two (Reduced Training Capacity) or Alternative Three (No Action) would constitute a major federal action with significant impact on the human environment, and that a Finding of No Significant Impact for the PA and Alternatives Two and Three should be issued to conclude the NEPA documentation process. Insufficient evidence was available to determine the extent and potential significance of impacts related to Alternative One. Consequently, it was concluded that further analysis specifically related to Alternative One would need to be completed prior to any impact determination for this alternative. Table 4-1 summarizes anticipated impacts resulting from the PA and alternatives.

**Table 4-1 Comparison of Anticipated Impacts**

Resource Area	Proposed Action	Alternative One	Alternative Two	Alternative Three
Land Use	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Visual Resources	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Topography, Soils or Geology	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Hydrology and Water Resources	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Biological Resources	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Historic and Cultural Resources	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Transportation and Circulation	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Air Quality	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Noise	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Hazardous Waste, Substances and Materials	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Population, Housing and Economic Conditions	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts
Health and Safety	less than significant impacts	insufficient information to make determination <sup>1</sup>	less than significant impacts	less than significant impacts
Utilities and Services	less than significant impacts	less than significant impacts	less than significant impacts	less than significant impacts

<sup>1</sup> Insufficient information is available to determine the potential for significant impact associated with this resource. Additional analysis or information is required prior to any determination of anticipated significance associated with Alternative One.

## 5 ACRONYMS AND ABBREVIATIONS

2	ADEQ	Arizona Department of Environmental Quality	55	MTT	Mobile Training Teams
3	ADWR	Arizona Department of Water Resources	56	MWR	Moral, Welfare, and Recreation Directorate
4	APE	Area of Potential Effect	57	NCA	National Conservation Area
5	AR	Army Regulation	58	NEPA	National Environmental Policy Act
6	AST	Above Ground Storage Tank	59	NHL	National Historic Landmark
7	ATC	Air Traffic Control	60	NM	Nautical Miles
8	BA	Biological Assessment	61	NOA	Notice of Availability
9	BLM	Bureau of Land Management	62	NOI	Notice of Intent
10	BMP	Best Management Practices	63	NO <sub>2</sub>	Nitrogen Dioxide
11	BO	Biological Opinion	64	NO <sub>x</sub>	Nitrogen Oxides
12	BRAC	Base Closure and Realignment	65	NHPA	National Historic Preservation Act
13	BTU	British Thermal Unit	66	NPDES	National Pollution Discharge Elimination System
14	CAA	Clean Air Act	67	NRCS	Natural Resource Conservation Service
15	CEQ	Council for Environmental Quality	68	NRHP	National Register of Historic Places
16	CFR	Code of Federal Regulations	69	O <sub>3</sub>	Ozone
17	CO	Carbon Monoxide	70	O&M	Operations and Maintenance
18	CPG	Comprehensive Procurement Guidelines	71	PA	Proposed Action
19	CWA	Clean Water Act	72	PAC	Protective Activity Center
20	DA	Department of Army	73	PIF	Partners in Flight
21	dB	Decibel	74	PM <sub>10</sub>	Particulate matter less than 10 micrometers in diameter
22	dBA	A-weighted Decibel	75	PM <sub>2.5</sub>	Particulate matter less than 2.5 micrometers in diameter
23	DoD	Department of Defense	76	POL	Petroleum, Oil, and Lubricants
24	DRMO	Defense Reuse and Marketing Organization	77	RCRA	Resource Conservation and Recovery Act
25	EA	Environmental Assessment	78	ROG	Reactive Organic Gases
26	EIS	Environmental Impact Statement	79	ROI	Region of Influence
27	ENRD	Environmental and Natural Resources Division	80	RU	Recover Unit
28	EO	Executive Order	81	SEMA	Special Electronic Mission Aircraft
29	EPA	Environmental Protection Agency	82	SHPO	State Historic Preservation Office
30	EPG	Electronic Proving Ground	83	SIP	State Implementation Plan
31	ER/MP	Extended Range/Multi Purpose	84	SO <sub>2</sub>	Sulfur Dioxide
32	F	Fahrenheit	85	SR	State Route
33	FAA	Federal Aviation Administration	86	SSH	Single Solider Housing
34	FH	Fort Huachuca	87	STX	Situational Training Exercises
35	FICUN	Federal Interagency Committee on Noise	88	SVRHC	Sierra Vista Regional Health Center
36	FNSI	Finding of No Significant Impact	89	SWPPP	Storm Water Pollution Prevention Plan
37	FPPA	Farmland Protection Policy Act	90	TCP	Traditional Cultural Property
38	FTX	Field Training Exercises	91	TDA	Table of Distribution and Allowances
39	HUD	Housing and Urban Development	92	TOC	Tactile Operation Center
40	IA	Inventory Area	93	TPU	Troop Program Unit
41	ICRMP	Integrated Cultural Resource Management Plan	94	TRADOC	Training and Doctrine Command
42	IED	Improvised Explosive Device	95	TRAP	Training Requirements Arbitration Panel
43	INRMP	Integrated Natural Resource Management Plan	96	TSDF	Treatment, Storage, and Disposal Facility
44	ISCP	Installation Spill Contingency Plan	97	UAV	Unmanned Aerial Vehicle
45	ISR	Intelligence, Surveillance, and Reconnaissance	98	USAIC	U.S. Army Intelligence Center
46	ITAM	Integrated Training Area Management	99	USASC	U.S. Army Signal Command
47	LAAF	Libby Army Airfield	100	USFS	U.S. Forest Service
48	LDN	Day-Night Sound Level	101	USFWS	United States Fish and Wildlife Service
49	MCA	Military Construction Army	102	USPB	Upper San Pedro River Basin
50	MGD	Million Gallons per Day	103	UXO	Unexploded Ordnance
51	MI	Military Intelligence	104	VFR	Visual Flight Rules
52	MOA	Memoranda of Agreement	105	WWTP	Waste Water Treatment Plant
53	MOUT	Military Operations Urbanized Terrain			
54	MSL	Mean Sea Level			

## 6 COMBINED REFERENCES

The following references are cited in the EA or its appendices.

- AGFD (Arizona Game and Fish Department). 2001a. *Hertotheca rutteri*. Unpublished Abstract Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD (Arizona Game and Fish Department). 2001b. *Sistrurus catenatus edwardsii*. Unpublished Abstract Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD (Arizona Game and Fish Department). 2001c. *Crotalus willardi willardi*. Unpublished Abstract Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD (Arizona Game and Fish Department). 2003a. *Empidonax fulvifrons pygmaeus*. Unpublished Abstract Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- AGFD (Arizona Game and Fish Department). 2003b. *Choeronycteris mexicana*. Unpublished Abstract Compiled and Edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ.
- Ahlstrand, G.M. 1982. Response of Chihuahuan Desert Mountain Shrub Vegetation to Burning, *Journal of Range Management*, 35:62-65.
- Aid, C. S. 1990. *Changes in Breeding Bird Density after Prescribed Burning in an Arizona Semidesert Grassland*. MS Thesis, University of Colorado.
- Beck, A.M. and R.J. Vogel. 1972. The Effects of Spring Burning on Rodent Populations in a Brush Prairie Savanna. *Journal of Mammalogy*, 53:336-346.
- Bingham, S.R., J.L. Hepworth, and J.P. Martin. 1965. A Casualty of Wildlife Following a Fire. In *Proceedings of the Oklahoma Academy of Science*, 45: 47-50.
- BLM (Bureau of Land Management). 1998. The upper San Pedro River Basin of the United States and Mexico, A resource directory and an overview of natural resource issues confronting decision-makers and natural resource managers. Arizona State Office, Bureau of Land Management, Report No. BLM/AZ/PT-98/021. 110 pp.
- Bock, C.E. and J.H. Bock. 1978. Responses of Birds, Small Mammals, and Vegetation to Burning Sacaton Grasslands in Southeastern Arizona. *Journal of Range Management*, 31:296-300.
- Bock, C. E. and J. H. Bock. 1983. Responses of Birds and Deer Mice to Prescribed Burning in Ponderosa Pine. *Journal of Wildlife Management*, 47:836-840.
- Bock, C. E., J. H. Bock, and B. C. Bennett. 1999. Songbird Abundance in Grasslands at a Suburban Interface on the Colorado High Plains. In P. D. Vickery and J. R. Herkert, eds. *Ecology and Conservation of Grassland Birds of the Western Hemisphere*. Studies in Avian Biology, 19.
- Bock, J.H. and C.E. Bock. 1992. Vegetation Responses to Wildfire in Native Versus Exotic Arizona Grassland. *Journal of Vegetation Science*, 3:439-446.
- Bolger, D. T., A. C. Allison, C. Roberts, R. M. Sauvajot, P. Potenza, C. McCalvin, D Tran, S. Mazzoni, and M. E. Soule. 1997. Response of Rodents to Habitat Fragmentation in Coastal Southern California. *Ecological Applications*, 7(2):552-563.
- Bowers, M. A. and S. F. Matter. 1997. Landscape Ecology of Mammals: Relationships Between Density and Patch Size. *Journal of Mammalogy*, 78(4):999-1013.
- CCCER (Cochise College Center for Economic Research). 2004. *The Indicator*, 5:2 Spring 2004.

Coffman and Associates. 2002. Sierra Vista Municipal Airport, Airport Master Plan. Sierra Vista Municipal Airport, Arizona.

Collins, M. G., C. Burt, and S. Conrad. 2004. Grassland Loss and Fragmentation in the Sierra Vista Subwatershed: A Cumulative Effects Analysis. Vernadero Group, Inc., Scottsdale, Arizona. Draft Final 6 August 2004.

Crooks, K. R. 2002. Relative Sensitivities of Mammalian Carnivores to Habitat Fragmentation. *Conservation Biology*, 16(2):488-502.

Desert Archaeology, Inc. 2003. Integrated Cultural Resource Management Plan for Fort Huachuca Military Reservation, Arizona. June.

Duncan, R. B. 1991. 1991 Fort Huachuca Mexican spotted owl inventory. Prepared for US Army Garrison, Environmental and Natural Resources Division, ATZS-EHB (Game Management), Fort Huachuca, Arizona. 15 August 1991.

Dyer, S. J., J. O. O'Neill, S. M. Wasel, and S. Boutin. 2001. Avoidance of Industrial development by Woodland Caribou. *Journal of Wildlife Management*, 65(3):531-542.

EEC. 2001. Mexican Spotted Owl Monitoring and Inventory Report for Year 2001. Prepared for Directorate of Installation Support, US Army Garrison, Fort Huachuca, Arizona.

EPA (Environmental Protection Agency). 2004. Green Book: Nonattainment Areas for Criteria Pollutants. Retrieved 1 October 2004 from <http://www.epa.gov/air/oaqps/greenbk/index.html>.

Erwin W.J. and R.H. Stasiak. 1979. Vertebrate Mortality during the Burning of a Reestablished Prairie in Nebraska. *The American Midland Naturalist*, 101:247-249.

FICUN (Federal Interagency Committee on Urban Noise). 1980. Guidelines for Considering Noise in Land Use Planning & Control. June.

FICUN (Federal Interagency Committee on Urban Noise). 1992. Federal Agency Review of Selected Airport Noise Analysis Issues.

Finberg, K.O. 1994. Community Structure Changes in a Grassland After a Wildfire and a Dry Season. MS Thesis. Tucson: Arizona State University.

Finch, D. M. and P. W. Stangel. 1993. *Status and Management of Neotropical Migratory Birds. General Technical Report RM-229*, U. S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Flather, C. H. and J. R. Sauer. 1996. Using landscape ecology to test hypotheses about large-scale abundance patterns in migratory birds. *Ecology*, 77(1):28-35.

Ford, P.L. and G.R. McPherson. 1996. Ecology of Fire in Shortgrass Prairie of the Southern Great Plains. In *Ecosystem Disturbance and Wildlife Conservation in Western Grasslands*. General Technical Report RM-GTR-285, 20-39. Fort Collins, Colorado: USFS, Rocky Mountain Range and Experiment Station.

Forman, R. T. 2000. Estimate of the Area Affected Ecologically by the Road System in the United States. *Conservation Biology*, 14(1):31-35.

Fort Huachuca. 2000. Libby Army Airfield. Retrieved 5 October 2004 from <http://huachuca-www.army.mil/UNITS/libbyaaf.htm>.

Fort Huachuca. 2003. Housing. Retrieved 25 October 2004 from <http://huachuca-www.army.mil/NEWCOMER/INPROC/Housing.htm>. Last update 21 February 2003.

Fort Huachuca Range Control. 2001. Terrain Type and Traffic Permitted by Training Area. Retrieved 5 October 2004 from <http://ag.arizona.edu/research/itam/rangehome.htm>.

Ganey, J.L., and R.P. Balda. 1989. Distribution and habitat use of Mexican spotted owls in Arizona. *Condor*, 91:355-361.

1 Germaine, S. S., S. S. Rosenstock, R. E. Schweinsburgm W. S. Richardson. 1998. Relationships Among  
 2 Breeding Birds, Habitat, and Residential Development in Greater Tucson, Arizona. *Ecological*  
 3 *Applications*, 8(3):680-691.  
 4 Germaine, S. S. and B. F. Wakeling. 2001. Lizard Species Distributions and Habitat Occupation Along an  
 5 Urban Gradient In Tucson, Arizona, USA. *Biological Conservation*, 97: 229-237.  
 6 Gori, D. F. and C. A. F. Enquist. 2003. An Assessment of the Spatial Extent and Condition of Grasslands  
 7 in Central and Southern Arizona, Southwest New Mexico, and Northern Mexico. The Nature  
 8 Conservancy, Arizona Chapter.  
 9 Grinder, M. I. and P. R. Krausman. 2001. Home Range, Habitat Use, and Nocturnal Activity of Coyotes  
 10 in an Urban Environment. *Journal of Wildlife Management*, 65(4):887-898.  
 11 Hagan, J. M. and D. W. Johnston. 1992. *Ecology and Conservation of Neotropical Migrant Landbirds*.  
 12 Smithsonian Institution Press, Washington DC.  
 13 Hass, C. C. 2000. Landscape fragmentation and connectivity for carnivores in the Upper San Pedro Basin.  
 14 Fort Huachuca Wildlife Office, Fort Huachuca, AZ.  
 15 Helzer, C. J. 1996. The Effects of Wet Meadow Fragmentation on Grassland Birds. MS Thesis,  
 16 University of Nebraska, Lincoln, Nebraska.  
 17 Hereford, R. 1993. Geomorphic evolution of the San Pedro River channel since 1900 in the San  
 18 Pedro Riparian National Conservation Area, southeast Arizona. USDI, Geological Survey, Open  
 19 File Report 92-339. 71pp.  
 20 Hessil, J. 2004. Wildlife Biologist, Fort Huachuca Arizona, Personnel Communication with Chuck Burt,  
 21 Vernadero Group, Claremont, California. Dated 12 October 2004.  
 22 Hoffmeister, D. F. 1986. *Mammals of Arizona*. The University of Arizona Press and the Arizona Game  
 23 and Fish Department, Phoenix, Arizona.  
 24 Howell, D.J. and D. Robinett. 1995. *Agave Management Plan Fort Huachuca, Arizona*. Prepared for  
 25 Department of the Army, Fort Huachuca Garrison.  
 26 Latta, M. J., C. J. Beardmore, and T. E. Corman. 1999. *Arizona Partners in Flight Bird Conservation*  
 27 *Plan*. Technical Report 142. Phoenix, AZ: Nongame and Endangered Wildlife Program, Arizona Game  
 28 and Fish Department.  
 29 Lee, D. S. and M. K. Clark. 1993. Arizona's Night Visitors. *Bats*, 11(2):3-5.  
 30 Lehman, R.N. and J.W. Allendorf. 1987. The Effects of Fire, Fire Exclusion and Fire Management on  
 31 Raptor Habitats in the Western United States. Western Raptor Management Symposium and Workshop,  
 32 Boise, Idaho. Scientific and Technical Series No. 13, National Wildlife Foundation, Washington, DC.  
 33 Lloyd, J., R. W. Mannan, S. Destefano, C. Kirkpatrick. 1998. The Effects of Mesquite Invasion on a  
 34 Southeastern Arizona Grassland Bird Community. *Wilson Bulletin*, 110(3):403-408  
 35 Mader, H.J. 1984. Animal habitat isolation by roads and agricultural fields. *Biological Conservation*,  
 36 29:81-96.  
 37 Martin, S.C. 1983. Responses of Semi-desert Grasses and Shrubs to Fall Burning. *Journal of Range*  
 38 *Management*, 36:604-610.  
 39 Maurer, B. A. 1985. Avian community dynamics in desert grasslands: observational scale and  
 40 hierarchical structure. *Ecological Monographs*, 55(3):295-312.  
 41 McLaughlin, S. P. and J. E. Bowers. 2000. Species Richness of Southeastern Grasslands and Oak  
 42 Savannas at Different Scales. In Audubon Research Ranch 2000, L Kennedy and S Seltzer, eds. National  
 43 Audubon Society Appleton-Whittell Research Ranch, Elgin, Arizona.  
 44 Middleton, J. and G. Merriam. 1981. Woodland Mice in a Farmland Mosaic. *Journal of Applied Ecology*,  
 45 18:703-710.

- 1 Miller, Jay D., Shelley R. Danzer, Joseph M. Watts, Sheridan Stone, and Stephen R. Yool. 2003. Cluster  
2 analysis of structural stage classes to map wildland fuels in a Madrean ecosystem. *Journal of*  
3 *Environmental Management*, 68:239-252.
- 4 Mills, G. S., J. B. Dunning, and J. M. Bates. 1989. Effects of urbanization on breeding bird community  
5 structure in southeastern desert habitats. *The Condor*, 91:416-428.
- 6 Moore, F. R., S. A. Gauthreaux, P. Kerlinger, and T. R. Simons. 1993. Stopover Habitat: Management  
7 Implications and Guidelines. In Status and Management of Neotropical Migratory Birds, Gen. Tech. Rep.  
8 RM-229, U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins,  
9 Colorado.
- 10 Morrison, M. L., W. M. Block, and H. S. Stone. 1995. Habitat Characteristics and Monitoring of  
11 Amphibians and Reptiles in the Huachuca Mountains, Arizona. *Southwestern Naturalist*, 40(2):185-192.
- 12 Nakata Planning Group, LLC. 1997. Real Property Master Plan Long Range Component. September.  
13 Natural Resources Conservation Service. 1997. Soil Survey of the San Pedro Valley, Arizona, An interim  
14 report from the Soil Survey of Cochise County, Douglas-Tombstone Part.
- 15 O'Dell, D. 2004. *Effects of Vegetation Removal and Trampling on Small Mammals and Vegetation*  
16 *Communities, 2003 Summary Report*. Prepared from LCTA Coordinator, Range Control, Fort Huachuca,  
17 Arizona.
- 18 Oxley, D. J., M. B. Fenton, G. R. Carmody. 1974. The Effects of Roads on Populations of Small  
19 Mammals. *Journal of Applied Ecology*, 11(1):51-59.
- 20 Rost, G. R. and J. A. Bailey. 1979. Distribution of Mule Deer and Elk in Relation to Roads. *Journal of*  
21 *Wildlife Management*, 43(3):634-641.
- 22 Sauer et al (Sauer, J.R., J.E. Hines, and J. Fallon). 2004. The North American Breeding Bird Survey  
23 Results and Analysis 1966-2003 Version 2004.1. U.S. Geological Survey, Patuxent Wildlife Research  
24 Center. Laurel, Maryland.
- 25 Scott, N.J. 1996. Evolution and Management of the North American Grassland Herpetofauna. In  
26 *Ecosystem Disturbance and Wildlife Conservation in Western Grasslands*, 40-53. General Technical  
27 Report RM-GTR-285. USFS, Rocky Mountain Forest and Range Experiment Station.
- 28 Sheery, T. W. and R. T. Holmes. 1996. Winter habitat quality, population limitation, and conservation of  
29 neotropical-nearctic migrant birds. *Ecology*, 77(1):36-48.
- 30 Sidner, R. 2000. Eleventh Annual Monitoring of Endangered Lesser Long-Nosed Bats on Fort Huachuca  
31 Military Reservation. Cochise County, Arizona, July-November 2000. EEC Project 99190.37.
- 32 Simons, L.H. 1989. Vertebrates Killed by Desert Fire. *The Southwest Naturalist*, 34: 144-145.
- 33 Smith, H. M. and D. Chiszar. 2000. The Herpetofauna of the research Ranch. In Audubon Research  
34 Ranch 2000, L. Kennedy and S. Seltzer, eds. National Audubon Society Appleton-Whittell Research  
35 Ranch, Elgin, Arizona.
- 36 Stebbins, R. C. 2003. Western Reptiles and Amphibians, Third Edition. Peterson Field Guides, Houghton  
37 Mifflin Comp., New York.
- 38 Svetlic, W. 1994. Soil survey of U.S. Army, Fort Huachuca, Cochise County, Arizona. Interim report.  
39 Fort Huachuca, AZ; U.S. Department of Agriculture, Natural Resources Conservation Service.
- 40 SVRHC (Sierra Vista Regional Health Center). 2004. Retrieved 8 October 2004 from  
41 <http://www.svrhc.org/aboutsvrhc.htm>.
- 42 Tester, J.R. 1965. Effects of a Controlled Burn on Small Mammals in a Minnesota Oak-Savanna.  
43 *Am Midland Nat.*, 74: 240-243.
- 44 Trombulak, S. C. and C. A. Frissell. 2000. review of Ecological Effects of Roads on Terrestrial and  
45 Aquatic Communities. *Conservation Biology*, 14(1):18-30.

1 Tweit, R. C. and J. C. Tweit. 1986. Urban development effects on the abundance of some common  
2 resident birds of the Tucson area in Arizona. *American Birds*, 40(3):431-436.

3 U.S. Army. 1996. Effects of Range Fire on Reptile Populations at McGregor Range, Fort Bliss. Prepared  
4 by M.E. Vogel, S. Demarias, and J.M. Mueller, Texas Tech University, Lubbock, Texas. Prepared for the  
5 DOE, Fort Bliss, Texas and New Mexico.

6 USAGFH (U.S. Army Garrison, Fort Huachuca). 2000a. Fort Huachuca Future Development Master Plan  
7 Environmental Impact Statement. Prepared by the Environmental and Natural Resources Division,  
8 Directorate of Installation Support, U.S. Army Garrison, Fort Huachuca, Arizona.

9 USAGFH (U.S. Army Garrison, Fort Huachuca). 2000b. Environmental Assessment, Comprehensive  
10 Unmanned Aerial Vehicle Testing and Training at Fort Huachuca, Arizona. Prepared by the  
11 Environmental and Natural Resources Division, Directorate of Installation Support, U.S. Army Garrison,  
12 Fort Huachuca, Arizona.

13 USAGFH (U.S. Army Garrison, Fort Huachuca). 2001a. Environmental Assessment, Increase in Training  
14 Load, U.S. Army Intelligence Center, Fort Huachuca, Arizona. Prepared by the Environmental and  
15 Natural Resources Division, Directorate of Installation Support, U.S. Army Garrison, Fort Huachuca,  
16 Arizona.

17 USAGFH (U.S. Army Garrison, Fort Huachuca). 2001b. Integrated Natural Resources Management Plan  
18 and Environmental Assessment 2001-2005. Prepared by the Environmental and Natural Resources  
19 Division, Directorate of Installation Support, U.S. Army Garrison, Fort Huachuca, Arizona.

20 USAGFH (U.S. Army Garrison, Fort Huachuca). 2002. Programmatic Biological Assessment for  
21 Ongoing and Programmed Future Military Operations and Activities at Fort Huachuca, Arizona. Prepared  
22 by the Environmental and Natural Resources Division, Directorate of Installation Support, U.S. Army  
23 Garrison, Fort Huachuca, Arizona.

24 USAGFH (U.S. Army Garrison, Fort Huachuca). 2003. Installation Spill Contingency Plan. Prepared by  
25 the Environmental and Natural Resources Division, Directorate of Installation Support, U.S. Army  
26 Garrison, Fort Huachuca, Arizona.

27 USAIC, FH (U.S. Army Intelligence Center, Fort Huachuca). 2001. Fort Huachuca Regulation 385-8.  
28 Retrieved 5 October 2004 from <http://ag.arizona.edu/research/itam/385-8.pdf>.

29 USAIC, FH (U.S. Army Intelligence Center, Fort Huachuca). 2003a. Motor Vehicle Traffic Code 190-5.  
30 Retrieved 5 October 2004 from [http://www.army.mil/PUBSFORM/PUBS/FHREGS/  
31 FH%20REG%20190-5.pdf](http://www.army.mil/PUBSFORM/PUBS/FHREGS/FH%20REG%20190-5.pdf).

32 USAIC, FH (U.S. Army Intelligence Center, Fort Huachuca). 2003b. Annual Economic Impact  
33 Statement: October 1, 2002 – September 30, 2003. U.S. Army Garrison, Fort Huachuca, Arizona.

34 USDA (U.S. Department of Agriculture). 2002. Natural Resources Conservation Service Soils  
35 Information. SSURGO. January.

36 USFS (U.S. Forest Service). 1999. Coronado National Forest Land and Resource Management Plan.  
37 Sierra Vista Ranger District. U.S. Forest Service. June.

38 USFS (U.S. Forest Service). 2000. Coronado National Forest, Sierra Vista Ranger district Fire  
39 Management. Retrieved 22 September 2004 from <http://www.fs.fed.us/r3/coronado/svrd/fire.htm>.

40 USFS (U.S. Forest Service). 2004. Coronado National Forest, Wildland Fire Amendment Frequently  
41 Asked Questions. Retrieved 22 September 2004 from <http://www.fs.fed.us/r3/coronado/wfa/faq.html>.

42 USFWS (U. S. Fish and Wildlife Service). 1993. *Lesser Long-Nosed Bat Recovery Plan*. Albuquerque,  
43 NM: U.S. Fish and Wildlife Service.

44 USFWS (U. S. Fish and Wildlife Service). 1995a. *Nongame Birds of Management Concern – the 1995*  
45 *List*. U.S. Washington, D.C.: Office of Migratory Bird Management.

46 USFWS (U. S. Fish and Wildlife Service). 1995b. Recovery plan for the Mexican spotted owl (*Strix*  
47 *occidentalis lucida*). US Fish and Wildlife Service, Southwest Region, Albuquerque, NM.

1 USFWS (U. S. Fish and Wildlife Service). 2001. Endangered and Threatened Wildlife and Plants: Final  
2 Designation of Critical Habitat for the Mexican Spotted Owl. Federal Register, 66(22):8530-8553.  
3 USFWS (U. S. Fish and Wildlife Service). 2002a. *Birds of Conservation Concern*. Arlington, VA:  
4 Division of Migratory Bird Management. (online version available at  
5 <http://migratorybirds.fws.gov/reports/bcc2002.pdf>).  
6 USFWS (U. S. Fish and Wildlife Service). 2002b. *Biological Opinion Fort Huachuca Future Military*  
7 *Operations and Programmed Future Military Operations and Activities*. Phoenix, AZ: Arizona  
8 Ecological Services Office.  
9 USFWS (U. S. Fish and Wildlife Service). 2004a. New Release, Black-tailed Prairie Dog Removed from  
10 Candidate Species List. USFWS, Lakewood, Colorado.  
11 USFWS (U. S. Fish and Wildlife Service). 2004b. Endangered and Threatened Wildlife and Plants; Final  
12 Designation of Critical Habitat for the Mexican Spotted Owl; Final Rule. Federal Register,  
13 69(168):53182-53298.  
14 Ward, A. L. 1976. Effects of Highway Construction and Use on Big Game Populations. Report No.  
15 FHWA-RD-76-174, Federal Highway Administration, Office of Research & Development, Washington,  
16 DC.

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Bennett, George 2004. USAGFH. Personal communication with Nancy Shelton, Vernadero Group, Inc. October 12.

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1

## **APPENDIX A**

2

### **GENERAL BASELINE CONDITIONS**

3

#### **FORT HUACHUCA, ARIZONA**

4

**NOVEMBER 2004**

# 1 INTRODUCTION

This report describes observed conditions of the human environment at Fort Huachuca, Arizona as of November 2004.

## 2 SETTING AND LAND USE

### 2.0 SETTING AND LOCATION

Fort Huachuca is located in Cochise County in southeastern Arizona. The Fort is south-southeast of Tucson and approximately 30 miles south of Interstate 10. Fort Huachuca boundaries are located on ridge lines over 8,600 feet above mean sea level (MSL) in elevation in the Huachuca Mountains and in areas adjacent to the San Pedro River, which drains the basin near 4,000 feet above MSL in elevation. The cantonment area is located just east of the adjacent city of Sierra Vista, while Huachuca City is located at the northern tip of the West Reservation of the installation. The 5,000 acre cantonment area lies between elevations of 4,400 and 5,200 feet above MSL.

Coronado National Forest (adjacent to Fort Huachuca). The Sierra Vista Ranger District of the Coronado National Forest encompasses 75,000 acres (117 sq. mi.) of forestland in the Huachuca Mountains immediately to the south and west of the installation. This land is predominately undeveloped and contains very few major access roads, campgrounds, or other high volume recreation facilities. The Forest Management Plans for the Coronado National Forest delineate management areas adjacent to the installation for visual resources, livestock grazing, game habitat, fuel wood harvest, and wilderness (USFS 1999).

San Pedro Riparian National Conservation Area (adjacent to Fort Huachuca). The San Pedro Riparian National Conservation Area (NCA) was designated in 1988 as part of the Arizona-Idaho Conservation Act. The NCA, which is managed by the Bureau of Land Management (BLM), includes roughly 57,000 acres (89 sq. mi.) in a strip approximately 36 miles (58 km) long and 2.6 miles (4 km) wide. This strip runs from the international boundary north to about 3 miles (5 km) south of St. David (but there is an approximate 2 mile [3 km] gap in the NCA just north of Palominas and a section just north of Lewis Springs). Its purpose, as defined in the legislation, is to conserve, protect, and enhance the riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the area. The riparian corridor through the NCA is one of the most extensive, contiguous reaches of cottonwood-willow gallery forests in the southwestern United States (BLM 1998).

Local Cities and Towns (within region). There are many small towns and communities in southeastern Arizona. Of the larger population centers, Sierra Vista is the largest, followed by Douglas, Bisbee, Benson, Huachuca City, and finally Tombstone. As was the case with many of the towns in the southwest United States, Bisbee and Tombstone began as mining towns. Benson developed as a transportation hub of the 1800's, and was a stop along the Southern Pacific Railroad, San Pedro River, Pony Express, and Butterfield Overland Stage Coach. Douglas emerged as a copper-processing town with a smelter built in 1901, and was also the annual roundup site for the local ranches. Today Douglas is an important international crossing at the Arizona-Mexico border.

### 2.1 U.S. ARMY GARRISON FORT HUACHUCA

The Fort Huachuca military reservation is comprised of over 73,000 acres (114 sq. mi.). The Fort is divided by Arizona State Route (SR) 90 into an East Reservation (28,544 acres; 45 sq. mi.) and a West Reservation (44,588 acres; 70 sq. mi.). The Fort is comprised of a cantonment area that includes Libby Army Airfield (LAAF) and various training ranges.

Cantonment Area and Libby Army Airfield. The 5,000 acre (8 sq. mi.) built-up part of Fort Huachuca consists of LAAF and the cantonment area. Each occupies approximately 2,500 acres (4 sq. mi.). LAAF

1 is located along the northern boundary of the cantonment area, is capable of receiving all aircraft in the  
2 Department of Defense inventory, and is an alternate site for emergency landing of the Space Shuttle. The  
3 airfield is also used by the city of Sierra Vista under a joint-use agreement with separate civilian entrance,  
4 parking, terminal, and maintenance facilities located outside the military airfield operations area. Civilian  
5 facilities are accessed via SR 90. The cantonment area could be considered the equivalent of a small but  
6 compact town. All of the normal features of a town are included, such as drinking water and wastewater  
7 treatment facilities and systems, recreational facilities, shopping areas, vehicle maintenance and repair  
8 areas, office space, other industrial activity facilities and residential areas. The Military Intelligence  
9 Center and School are located within the cantonment area. Total square footage of the approximately  
10 2000 structures within the cantonment area is approximately 8 million square feet. The “Old Post”  
11 National Historic Landmark District, also within the cantonment, includes adobe residential buildings,  
12 former cavalry barracks now used for administrative functions, the Brown Parade Field, and other  
13 significant and contributing structures.

14 Training Ranges. Training Ranges on the West and East Reservations comprise 68,002 acres (106 sq. mi.)  
15 or approximately 93 percent of the installation. Active and Reserve component units of all services utilize  
16 the training areas for various mounted and dismounted training activities including mountain/desert field  
17 training, escape and evasion training, and brigade-size field training exercise.

18 The West Range is on the West Reservation, west of the cantonment area and covers approximately  
19 16,453 acres (26 sq. mi.) of land. The West Range is used for training and testing. There are no live fire  
20 training areas in this range, and at specified times the range is used for research, development and testing.  
21 The northwest corner of the West Range, known as Training Area Juliet, is predominantly used by the  
22 Intelligence School for training of remote control pilots for unmanned aerial vehicles (UAVs). The  
23 Electronic Proving Ground (EPG) performs research and development testing in this area. The launch and  
24 recovery of UAVs is a primary event performed on the West Range.

25 The South Range is on the West Reservation located south of the built-up area and covers approximately  
26 24,334 acres (38 sq. mi.) which includes most of the installation’s extent of the Huachuca Mountains. The  
27 eastern slopes of the southern portion of the mountains are used in part for impact areas from the firing  
28 positions located in the flat terrain of the eastern portion of the range. Training and some testing occur in  
29 the northern portion of the mountains. The range is divided into 12 training areas, 17 firing ranges, and  
30 several impact areas.

31 The East Range is on the East Reservation, east of the cantonment area and covers approximately 27,215  
32 acres (42 sq. mi.) of land. The area contains six training areas, a demolition range, a tactical assault  
33 landing strip, an impact area, and three drop zones. Area Zulu contains a 6954 acre (11 sq. mi.) impact  
34 area for various types of self propelled artillery and mortars. When live-fire exercises occur, the entire  
35 East Range is closed for all other training activities. Some areas within Area Zulu may contain  
36 unexploded ordnance (UXO). Fort Huachuca Range Control dictates strict adherence to the ‘off-limits’  
37 policy of this impact area and warning signs are posted in the area to alert personnel of the potential  
38 danger. Aside from hunting, outdoor recreation is not permitted on the East Range (USAGFH 2001b).

39 Outdoor Recreation. Fort Huachuca has a rich cultural history, scenic landscapes, and diverse wildlife  
40 populations, which offer a wide variety of recreational opportunities to civilian and military personnel and  
41 the general public. Over 9,000 participants take advantage of outdoor programs annually, with most  
42 activities being non-consumptive outdoor recreation such as picnicking, camping, hiking, horseback  
43 riding and bird watching.

44 The Morale, Welfare and Recreation Directorate (MWR) operates a number of outdoor recreation  
45 facilities and programs on Fort Huachuca. Hunting is allowed on the Fort in cooperation with the  
46 Directorate of Installation Support and the Arizona Department of Game and Fish. The MWR also  
47 operates the Sportsman’s Center, which includes target shooting and supports the hunting and fishing

1 programs on Fort Huachuca. The Buffalo Corral Riding Stables, located on the West Gate Road, provides  
2 both horse rentals and boarding facilities. In addition to these activities, the public has access to 45 miles  
3 (72.4 km) of hiking trails in the mountainous parts of the Fort.

## 4 **2.2 MILITARY OPERATIONS AND ACTIVITIES**

5 The ongoing missions and activities at Fort Huachuca constitute the baseline at the installation. The  
6 operations, missions, and activities previously discussed in Fort Huachuca's July 2002 BA (USAGFH  
7 2002) and in the BO issued by the USFWS later that year (USFWS 2002b) are incorporated by reference.

8 Fort Huachuca is one of 16 U.S. Army installations under the command and control of the U.S. Army  
9 Training and Doctrine Command (TRADOC). Fort Huachuca's higher headquarters for garrison  
10 operations is the Installation Management Agency, with the southwestern regional headquarters located at  
11 Fort Sam Houston, Texas. Fort Huachuca remains the Headquarters for the USAIC. It is also the  
12 headquarters for the U.S. Army Signal Command (USASC)/NETCOM.

13 The Fort Huachuca Programmatic Biological Assessment (USAGFH 2002) contains a detailed discussion  
14 of ongoing military operations and activities to include:

- 15 • Military Intelligence Training
- 16 • Intelligence and Communications Systems
- 17 • Management, Operation, and Maintenance of Army Information Systems
- 18 • Intelligence and Electronic Warfare Equipment Training and Testing
- 19 • Communications Systems Training and Testing
- 20 • Field Training Exercise
- 21 • Land Navigation
- 22 • Patrolling and Tactics Training
- 23 • Individual Development Training
- 24 • Vehicle Maneuver Training
- 25 • Live Fire Qualification and Training
- 26 • Administrative and Support Activities
- 27 • Fixed-Wing Piloted Aircraft Training
- 28 • Rotary-Wing Aircraft Operation and Training
- 29 • Unmanned Aerial Vehicle Testing and Training
- 30 • Unmanned Drug Surveillance Balloon Operation
- 31 • Hunting and Fishing
- 32 • Hiking, Camping, and Sports
- 33 • Horseback Riding and Grazing

Table 1 identifies currently programmed facility development on Fort Huachuca.

**Table 1 Long-Range MCA and Operation and Maintenance  
Army (OMA) Projects Listing (FY 05-14)**

FY	Project Description	Project No.	Scope	Unit of Measure	Funding
06	Barracks with Battalion (P/S only)	38675	224795	SF	MCA
06	UAV Training Facility (P/S only)	55205	24540	SF	MCA
06	Chapel	50198	19940	SF	MCA
06	Global Information (P/S only)	55241	83250	SF	MCA
06	Vehicle Maintenance Facility	01388	21600	SF	MCA
07	Electronic Maintenance Facility (P/S only)	47283	50507	SF	MCA
07	Test & Evaluation Facility (P/S only)	53342	41220	SF	MCA
07	Youth Center Addition	33321	5332	SF	MCA
07	Community Club (P/S only)	45970	10000	SF	NAF
07	Sportsman Center (P/S only)	45969	10000	SF	NAF
07	Water Tank Potable (P/S only)	54561	.6m	GAL	MCA
07	Running Track (P/S only)	52128	5280	LF	MCA
07	Buffalo Corral Upgrade	45972	--	--	NAF
07	Pershing Plaza E/1 (P/S only)	31430A	75	Units	MCA/AFH
08	Aircraft Fuel Storage (P/S only)	46513	458000	GAL	MCA
08	Airfield Fence (P/S only)	44768	36800	LF	MCA
08	Pershing Plaza E/2 (P/S only)	31430B	77	Units	MCA/AFH
09	Chapel (Ed) (P/S only)	46484	16455	SF	MCA
10	Pershing Plaza E/3 (P/S only)	31430C	75	Units	MCA/AFH
10	Roads Paved (P/S only)	28561	--	LF	MCA
10	Cavalry Park #6 & Signal Village #1	42752	56	Units	MCA/AFH
11	Ammunition Supply Point (P/S only)	11708	25163	SF	MCA
11	Miles Manor 1 & 2 (P/S only)	31432	46	Units	MCA/AFH
12	Christy Sewer (P/S only – awaiting funds)	48149	--	--	OMA
12	Combined Sewers areas 5 & 6 (P/S only)	48327	--	--	OMA
13	Army Continuing Ed Services Bldg	56208	--	--	MCA
13	Combined Sewers areas 3 & 4	53291	--	--	OMA
14	Main Gate Access Bldg (Being Programmed)	58605	8600	SF	MCA
14	East Gate Access Bldg (Being Programmed)	58603	5600	SF	MCA

### 3 VISUAL RESOURCES

The topography at Fort Huachuca is varied with considerable visual relief. Fort elevations range from less than 4,000 feet above mean sea level (MSL) on the northeast edge of the East Range to over 8,600 feet above MSL on the South Range near Ramsey Peak in the Huachuca Mountains. Fort Huachuca is in a region dominated by rangelands with scattered rural development and small to medium urban clusters.

#### 3.0 VISUAL CHARACTER

There are two visually distinct areas of the Fort surrounded by similar landscapes. The majority of the cantonment area of Fort Huachuca is urban in appearance due to the presence of large administration buildings, testing and training facilities, and hangars and the air traffic control (ATC) tower at LAAF. The southern portion of the cantonment area is suburban in character, with landscaped areas, smaller structures, and a variety of recreational amenities and housing facilities. Dominant visual elements include Fort structures, such as administration buildings, housing structures, offices, and other buildings.

1 Training ranges at Fort Huachuca are undeveloped in appearance with a variety of topographic relief and  
2 vegetation. The East Range is dominated by scrubland and dirt roads and trails with a few scattered  
3 developments and facilities throughout. The west and south ranges are comprised of desert grasslands and  
4 scrublands transitioning to oak woodlands and forests into the higher elevations of the Huachuca  
5 Mountains. Both ranges contain rolling hills and valleys extending from the foothills of the Huachuca  
6 Mountains. Scattered developments such as the Black Tower UAV complex and Site Maverick comprise  
7 the majority of developed areas on the West Range. The South Range is mostly undeveloped with the  
8 exception of live firing range positions, recreational facilities, and a network of dirt and paved road  
9 surfaces.

### 10 **3.1 VIEWSHEDS**

11 Short- and long-range views from the Fort include rangelands and Whetstone Mountains to the north,  
12 scrublands and riparian areas to the northeast, urban development (city of Sierra Vista) to the east, Santa  
13 Rita Mountains to the West, and the foothills to the ridgelines of the Huachuca Mountains to the south  
14 and southwest.

### 15 **3.2 SCENIC HIGHWAYS AND OTHER RESOURCES**

16 No scenic highways, national parks, or state parks border the Fort. The nearest State-designated Scenic  
17 Highway is the Patagonia – Sonoita Scenic Road located approximately 20 miles west of the Fort  
18 extending from Interstate 10 through Sonoita on SR 83 and on to Nogales, Arizona via SR 82 with no  
19 view of the Fort. Karchner Caverns is the nearest state park approximately 20 miles north of the Fort  
20 along SR 90. The San Pedro NCA borders the eastern portion of the east range but views from the NCA  
21 onto the Fort are limited to approximately 0.25 mile due to a lower elevation and obscuring hills and  
22 vegetation conditions on the east range.

## 23 **4 TOPOGRAPHY, SOILS, AND GEOLOGY**

### 24 **4.0 TOPOGRAPHY AND PHYSIOGRAPHIC CONDITIONS**

25 Fort Huachuca is located in the Mexican Highland Section of the Basin and Range Physiographic  
26 Province, which extends through the southwestern United States and into the Mexican states of Sonora  
27 and Chihuahua.

28 The topography of the basin and range province is characterized by numerous northwest-southeast  
29 trending mountain ranges that are separated by wide alluvium filled basins. Within the Basin is the  
30 northwest trending Upper San Pedro River Valley, which extends 60 miles (97 km) from the Mexican  
31 Border to just north of the City of Benson. Elevations along the valley floor range from 4,200 feet above  
32 MSL at the Mexican Border to 3,300 feet above MSL at its northern boundary.

33 The principal geographic features of the Sierra Vista subwatershed include: the Huachuca Mountains;  
34 pediment surface and floodplain; several unconnected washes, canyons, and draws; and a small tributary  
35 system feeding Soldier Creek. The San Pedro River is approximately 10 miles (16 km) east of Fort  
36 Huachuca's main gate and 0.5 miles (0.8 km) east of the installation's East Range boundary. The  
37 Babocomari River is within approximately 0.25 mile (.08 km) of the installation's northern boundary on  
38 the East Range.

39 Elevations of the mountains within the Upper San Pedro Basin range from 5,000 to 9,446 feet above MSL  
40 at Miller Peak, the highest point in Cochise County. Elevations within the boundaries of Fort Huachuca  
41 range from below 4,000 feet above MSL on the northeast edge of the East Range to over 8,600 feet above  
42 MSL on the South Range near Ramsey Peak.

## **4.1 GEOLOGY**

The area encompassed by Fort Huachuca contains three broad topographic zones: mountains, alluvial fans, and a broad bajada formed from the coalescence of several alluvial fans. The alluvial fans south of the Babocomari River Valley within the West Range are dissected by three major drainages: Blacktail Canyon, Slaughterhouse Canyon and Huachuca Canyon. All of these drainages are intermittent, flowing in response to local rainfall. Huachuca Canyon Creek serves as the major storm water interceptor for Huachuca Canyon and the Fort's cantonment area.

The unconsolidated and semi-consolidated sediments of the Upper San Pedro River Basin (USPB) consist of three layers. The lowest unit is a thick, cemented conglomerate (Pantano Formation) that is overlain by the lower basin fill unit, composed of weakly to strongly cemented layers of interbedded sandy clay, silty sand, and sandy gravel. This layer is approximately 235 feet (72 meters) thick in the Fort Huachuca well field. The upper basin fill unit consists of very permeable, flat-lying layers of weakly compacted clay, gravel, sand and silt of middle to late Pleistocene age. Its thickness in the vicinity of the Fort is approximately 650 feet (198 meters). When combined, the upper and lower basin fill units form the USPB's principal groundwater reservoir. The floodplain alluvium overlying the upper basin fill in the San Pedro River Valley is composed of highly permeable unconsolidated gravel, sand, and silt. Although limited in extent, the alluvium seems to play an important role in sustaining the flow of the Upper San Pedro River.

## **4.2 SOILS**

Fort Huachuca has a diverse assortment of soil types directly related to differences in climate, parent material, and topography at the installation. The soils exhibit wide variations in depth, texture, and chemical properties. Roughly 30% of the soils are less than two feet in depth over bedrock.

The Soil Survey of Fort Huachuca (NRCS 1997) characterizes the types of soils that occur at the installation, locations of the soil types, and potential constraints. The Natural Resources Conservation Service (NRCS) system classifies soils into one of four groups based upon their infiltration capacity and their ability to transmit water through them. Fort Huachuca is dominated by soils classified as being in the hydrologic soil group "D", with some types being classified in hydrologic soil group "C". Group "D" soil types have very slow infiltration rates when saturated and have an extremely low water transmission rate. These properties are usually caused by a high percentage of clays, the existence of claypans or clay layers near the surface, or where shallow soils overlie nearly impervious bedrock near the surface. Group "C" types have moderate to slow infiltration rates when thoroughly wetted and have a slow water transmission rate. Both of these soil types promote higher amounts of runoff and streamflow from storm events.

Many soils in the hilly and mountainous areas, particularly on the south and west ranges, are shallow with steep slopes; these soils tend to be droughty with a low available water capacity and susceptible to erosion. The high sodium and gypsum contents of many soils on the East Range make these soils subject to gully erosion and piping; they also are very corrosive to concrete and steel. The soil of the cantonment area consists of alluvial fan soils (White House complex, Lanque soil, Courtland-Sasabe-Diaspar complex, Blacktail-Pyeatt complex, Blakeney soil, and Combate soil) (Svetlic 1994). Almost one-quarter of the land area of the post has deep red clay soils that have slow permeability and tend to be poorly drained. They become very slippery when wet and susceptible to compaction. Other properties of soils at the installation influencing land use and management are gravelly or rocky soils, soils with hard pans, and deep, droughty, sandy soils.

## **4.3 SEISMIC AND GEOLOGIC HAZARDS**

The primary seismically active area affecting southeastern Arizona is near Colonia Morales, Sonora, Mexico, approximately 100 miles (161 km) southeast of Fort Huachuca. In 1887, that locale was the site of an earthquake with an impact of XI to XII on the Modified Mercalli Scale (MMS), which equates to an

energy equivalent to a Richter number of about 8. Reports from the Tombstone area indicate that this quake resulted in damage with an impact of VII MMS (5.5 Richter) in the Upper San Pedro Valley, which tumbled adobe walls and cracked building foundations (Dubouis and others 1982 cited in Hereford 1993). The U.S. Department of Commerce, Environmental Science Service Administration includes Fort Huachuca, along with the entire state of Arizona, in the VII MMS intensity earthquake zone (Algermissen 1969). An earthquake of this magnitude would cause serious damage to buildings, bend railroad tracks, and cause landslides on unstable slopes.

Facilities construction within the Fort's cantonment area has generally avoided floodplains and flood prone areas. Minor flooding affected several buildings in single events during 1999 and 2002. Since that time, drainage management work has been done in those areas to reduce potential for reoccurrence. More regular impacts are to unpaved roads in Garden and Huachuca canyons during heavy monsoonal storms. During these storms, the roads become part of the stream bed and can experience significant erosion or deposition, leading to road repair needs. Additional drainage management has been a priority in the urbanized parts of Fort Huachuca to prevent future flooding, both in the urban areas down gradient, but also to reduce unnatural sedimentation in the San Pedro. These efforts are ongoing.

## **5 HYDROLOGY AND WATER RESOURCES**

### **5.0 REGIONAL OVERVIEW**

The USPB, which extends from the Mexican Border to just north of the City of Benson, has been divided into subwatersheds by the Arizona Department of Water Resources (ADWR). These divisions are intended to better define and manage the available water resources within the Basin. The Sierra Vista subwatershed contains Fort Huachuca, the city of Sierra Vista, and most of the San Pedro Riparian NCA. This subwatershed is bounded by the Mexican Border to the south, the Mule Mountains on the east, the Huachuca and Mustang Mountains on the west and SR 82 on the north.

The groundwater system within the Sierra Vista subwatershed of the USPB consists of the "regional" aquifer system, comprised of the upper and lower Basin fill units, and the shallow floodplain aquifer adjacent to the San Pedro River. These are the main sources of groundwater in the subwatershed. Total groundwater reserves in the Sierra Vista subwatershed are estimated to be approximately 31.8 million acre feet. The principal components of the local hydrologic cycle include precipitation, evaporation, infiltration, transpiration, groundwater recharge, storage, and stream flow. Local aquifer recharge is believed to be primarily from the mountain fronts. The contribution of precipitation in the lower basin areas to the groundwater recharge is considered to be insignificant because of the low rainfall and high evaporation rates in the valley areas.

The movement of groundwater within the Sierra Vista subwatershed is believed to be directed from the valley margins towards the San Pedro River. The exception to this may occur in the vicinity of the Fort Huachuca and the City of Sierra Vista's groundwater well fields where the flow is believed to be directed towards the cone of depression, or lower groundwater levels, caused by the withdrawal of water from these areas. The cone of depression appears to be oriented in a northwest-southeast direction, encompassing an area of approximately 7.5 square miles. Over a twenty-year period from 1966 to 1986, the groundwater level within this area has reportedly declined at a rate of approximately 1.4 feet per year. Recent efforts by The Nature Conservancy, BLM and Fort Huachuca to purchase conservation easements in the area are intended to help slow the growth of the cone of depression. Other projects are also underway by members of the Upper San Pedro Partnership to help with this effort.

### **5.1 FORT HUACHUCA WATER SUPPLY**

Fort Huachuca's water consumption has continued to decrease in recent years. These decreases are expected to continue as the Fort continues to plan and implement additional water management projects. The decrease in water pumping is from changes in watering policy and water use. Actual water net

1 pumpage, not a per capita average, has been reduced. The first is that water use data is from actual  
2 metered pumpage at the well heads, not from individual metered use. As a result, volumes are not  
3 corrected for baseline industrial and landscape use, which is relatively independent of population  
4 fluctuations. Minor fluctuations in population do not decrease the amount of administrative space, which  
5 requires cooling, and an abnormally hot summer can cause a measurable increase in water consumption.  
6 Another major water use, independent of population, is the U.S. Forest Service Air Tanker Fire Base  
7 operating at LAAF during the summer fire season.

8 Additional efforts are underway by both Fort Huachuca and the City of Sierra Vista to minimize potential  
9 effects of groundwater pumping on the San Pedro River and its riparian ecosystem through recharge with  
10 treated effluent.

## 11 6 BIOLOGICAL RESOURCES

### 12 6.0 VEGETATION

13 A general description of plant community types on Fort Huachuca can be found in the Integrated Natural  
14 Resources Management Plan (INRMP) (USAGFH 2001b) and a recent Programmatic Biological  
15 Assessment (USAGFH 2002).

### 16 6.1 WILDLIFE

17 No surveys for wildlife were conducted for this study. Wildlife potentially occurring in grasslands and  
18 oak woodlands is discussed.

19 Reptiles and Amphibians. Surveys for reptiles and amphibians have not taken place in grasslands on Fort  
20 Huachuca. However, a list of amphibians and reptiles occurring in grasslands at the Audubon Research  
21 Ranch a few miles west of the Fort was compiled. A total of six species of amphibians, 19 species of  
22 lizards, and 17 species of snakes have been detected (Smith and Chiszar 2000). Based on data collected  
23 by Morrison et al (1995) for the oak-juniper (*Juniperus* sp.) savannah, common species in the grasslands  
24 are whiptails (*Cnemidophorus* spp.) and tree lizard (*Urosaurus ornatus*).

25 Surveys for reptiles and amphibians in the Huachuca Mountains resulted in the observation of 15 species  
26 (Morrison et al 1995). These surveys focused on habitats that included oak, juniper, and pine (*Pinus* sp.).  
27 The mountain spiny lizard (*Sceloporus jarrovi*) was the most common species encountered while  
28 whiptails and the tree lizard were less common. The rock rattlesnake (*Crotalus lepidus*) and black-tailed  
29 rattlesnake (*C. molossus*) were the most abundant snakes in the oak woodlands. The only amphibian  
30 encountered was red-spotted toad (*Bufo punctatus*) (Morrison et al 1995).

31 Birds – General. Breeding bird surveys in the grasslands on the West Range resulted in the observation of  
32 20 species of birds and common species included the grasshopper sparrow (*Ammodramus savannarum*),  
33 Botteri's sparrow (*Aimophila botterii*), eastern meadowlark (*Sturnella magna*), mourning dove (*Zenaida*  
34 *macroura*), northern mockingbird (*Mimus polyglottos*), and horned lark (*Eremophila alpestris*). Other  
35 breeding bird species in the grasslands of Fort Huachuca included the scaled quail (*Callipepla squamata*),  
36 western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), rufous-crowned sparrow  
37 (*Aimophila ruficeps*) (Aid 1990).

38 Breeding bird surveys have not been conducted in the oak woodlands on Fort Huachuca. Common species  
39 in oak woodlands would likely include the acorn woodpecker (*Melanerpes formicivorus*), Cassin's  
40 kingbird (*Tyrannus vociferans*), western scrub jay (*Aphelocoma californica*), bushtit (*Psaltiriparus*  
41 *minimus*), Bewick's wren (*Thryomanes bewickii*), and other species based on information from local  
42 breeding bird survey routes (Sauer et al 2004).

43 Birds – Game. Common game birds likely to occur in grasslands habitat include the mourning dove,  
44 Gambel's quail (*Callipepla gambelii*), and scaled quail (USAGFH 2001b).

1 Birds – Bird Species of Conservation Concern. Bird species that breed in temperate North America and  
2 winter in the tropics are referred to as neotropical migrants and have become the focal point of much  
3 ornithological research, management, and conservation concern. Habitat loss and degradation,  
4 fragmentation on the breeding grounds, and the elimination of optimum wintering habitat in the tropics  
5 are likely the major reasons for these declines (Flather and Sauer 1996, Sheery and Holmes 1996). Also,  
6 the loss of important stop-over habitat used during migration may affect the survival of neotropical  
7 migrants (Moore et al. 1993).

8 In response to declines in bird populations, Executive Order (EO) 13186, Responsibilities of Federal  
9 Agencies to Protect Migratory Birds, was issued on 10 January 2001. This EO recognized the ecological  
10 and economic importance of migratory birds to this and other countries. It requires Federal agencies to  
11 evaluate the effects of their actions and plans on migratory birds with an emphasis on species of  
12 conservation concern in their NEPA documents. Species of conservation concern are those identified in 1)  
13 *Migratory Nongame Birds of Management Concern in the United States* (USFWS 1995a), 2) priority  
14 species identified by established plans such as those prepared by Partners in Flight (PIF), and 3) listed  
15 species in 50 CFR 17.11. Migratory bird species of conservation concern that may occur at and in the area  
16 of the project sites were determined using information from USFWS (2002a) which is an updated version  
17 of USFWS (1995a) and from the Arizona PIF Bird Conservation Plan (Latta et al. 1999).

18 Fort Huachuca falls within the Sierra Madre Occidental (U. S. portion only) Bird Conservation Region  
19 (BCR Region 34) (USFWS 2002a). A total of 39 bird species of conservation concern are within this  
20 region and of these, 10 occur or could occur in grasslands (Table 2).

**Table 2 Birds of Conservation Concern That Occur or Potentially Occur in Grasslands and Oak Woodlands on Fort Huachuca Based on Species in Bird Conservation Region 34 and Arizona PIF Bird Conservation Plan**

Species		Occurrence on Fort Huachuca
Common name	Scientific name	
Grasslands		
Botteri’s sparrow	<i>Aimophila botterii</i>	Breeding species on Fort Huachuca.
Rufous winged sparrow	<i>Aimophila carpalis</i>	Likely does not occur on or in the area of Fort Huachuca.
Cassin’s sparrow	<i>Aimophila cassinii</i>	Breeding species on Fort Huachuca.
Baird’s sparrow	<i>Ammodramus bairdii</i>	Occurs on Fort Huachuca during the winter.
Grasshopper sparrow	<i>Ammodramus savannarum</i>	The <i>perpallidus</i> subspecies occurs during the winter and <i>ammolegus</i> subspecies occurs during the breeding season.
Ferruginous hawk	<i>Buteo regalis</i>	Likely occurs on Fort Huachuca during the winter.
Lark bunting	<i>Calamospiza melanocorys</i>	Likely occurs on Fort Huachuca during the winter.
Chestnut-collared longspur	<i>Calcarius ornatus</i>	Likely occurs on Fort Huachuca during the winter.
Mountain plover	<i>Charadrius montanus</i>	Not known to occur on or in the area of Fort Huachuca.
Aplomado falcon	<i>Falco femoralis septentrionalis</i>	Not known to occur on or in the area of Fort Huachuca.
Oak woodlands		
Buff-breasted flycatcher	<i>Empidonax fulvifrons</i>	Breeding species on Fort Huachuca.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Year-round resident on Fort Huachuca.
Eastern (Azure) bluebird	<i>Sialia sialis fulva</i>	Year-round resident of the Huachuca Mountains and Fort Huachuca.
Montezume quail	<i>Cyrtonyx montezumae</i>	Year-round resident on Fort Huachuca.
Band-tailed pigeon	<i>Columba fasciata</i>	May be year-round resident on Fort Huachuca.

Source. Latta et al 1999, USAIC, FH 2001, USFWS 2002a.

**Mammals.** Eighteen species of small mammals were trapped on the South Range of Fort Huachuca (O'Dell 2004). No data regarding abundance of these species was provided in this progress report. It is assumed that species such as the hispid cotton rat (*Sigmodon hispidus*), silky pocket mouse (*Perognathus flavus*), and deer mouse (*Peromyscus leucopus*) were common in the grasslands and grasslands in the open oak woodlands.

Hass (2000) documented the occurrence of 13 medium to large carnivores along 20 survey routes on Fort Huachuca. Of these, ten were detected in grassland and woodland habitats. The American badger (*Taxidea taxus*) was detected 40 percent of the time in grasslands followed by the coyote (*Canis latrans*) at 30 percent. The remaining seven species were detected in grasslands 15 to 21 percent of the time. Species detected most frequently in woodlands were the gray fox (*Urocyon cinereoargenteus*) (32 percent of the time), hog-nosed skunk (*Conepatus mesoleucus*) (23 percent), and puma (*Puma concolor*) (21 percent). The remaining species were detected 4 to 17 percent of the time in woodlands.

Mule deer (*Odocoileus hemionus eremicus*) or their sign was observed at all sites surveyed. A possible black bear (*Ursus americanus*) track was seen at the Training Area Papa site. Other large mammals that

occur in grasslands are the pronghorn antelope (*Antilocapra americana*) and javelina (*Pecari tajacu*) while the javalina would also be expected to occur in the oak woodlands.

## 6.2 SPECIAL-STATUS SPECIES

Special-status species are those that have a USFWS designation as threatened, endangered, proposed threatened, proposed endangered, or candidate. Special-status species with the potential of occurring on Fort Huachuca and being affected by the Proposed Action or alternatives were determined by reviewing the Fort Huachuca Programmatic Biological Assessment (USAGFH 2002), resulting USFWS Biological Opinion (BO) (USFWS 2002) and the USFWS Arizona web-site (<http://arizonaes.fws.gov>) on October 15, 18, 19, 2004. The lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) is known to occur on Fort Huachuca and utilizes grasslands as well as oak-grassland savannah for foraging. The black-tailed prairie dog (*Cynomys ludovicianus*) was listed as a federal candidate species but was removed from the list of candidate species in August 2004 (USFWS 2004a). It inhabits grasslands but does not occur on Fort Huachuca or in the State of Arizona. The northern aplomado falcon (*Falco femoralis septentrionalis*) is a federally endangered species but as indicated above, it does not occur on or in the area of Fort Huachuca. The Mexican spotted owl (*Strix occidentalis lucida*) is a federally threatened species and can occur in the oak woodlands on occasion.

Lesser long-nosed bat. The lesser long-nosed bat is a federal and state endangered species and was listed as endangered on 22 September 1988. A status report and other surveys conducted during the 1980s suggested that bat numbers had fallen from the tens of thousands to near 500 individuals or fewer (USFWS 1993). The species was found to be in jeopardy because of disturbance of roost sites, loss of food sources (paniculate agave) and direct killing by humans. Ecological information regarding this species as well as its status on Fort Huachuca can be found in the Fort Huachuca Programmatic Biological Assessment (USAGFH 2002) and associated BO (USFWS 2002b). Pertinent details from these reports are summarized below.

Fort Huachuca is on a lesser long-nosed bat migratory corridor which is used during the southward seasonal movements. There are no recorded observations of pregnant or lactating females on the Fort. Grasslands and lower oak woodlands provide summer and early fall foraging habitat. Lesser long-nosed bat surveys on Fort Huachuca beginning in 1989 resulted in the discovery of numerous day roosts and monitoring data showed that the peak numbers ranged from 24 in 1990 to about 3,900 in 2000 (Sidner 2000).

Palmer agave (*agave palmeri*) is the principal lesser long-nosed bat foraging species on Fort Huachuca, and due to its importance, an Agave Management Plan was implemented (Howell and Robinett 1995). Palmer agave occurs principally on grasslands and lower oak woodlands on Fort Huachuca. Four areas totaling 5,117 acres are protected under the Agave Management Plan. Evidence seems to indicate that bat foraging areas are not limiting on Fort Huachuca and the only significant threat to the stands of agave is fire (USFWS 2002b).

Mexican spotted owl. The Mexican spotted owl is a federal and state threatened species. On 1 February 2001, the USFWS provided final designated over 4,600,000 acres (7188 sq. mi.) as critical habitat for this species. This included 830,000 acres (1297 sq. mi.) in Arizona and 21,996 acres (34 sq. mi.) of this area was on Fort Huachuca (USFWS 2001). However, this final designation of Mexican spotted owl critical habitat was challenged in court and a revised final rule was published in August 2004 (USFWS 2004b). One change was to remove land on Fort Huachuca from critical habitat designation so there is now no Mexican spotted owl critical habitat on Fort Huachuca.

The habitat characteristics of Mexican spotted owl nesting and roosting sites generally consist of multi-layered, uneven-aged forests with high canopy closure or rocky, shaded canyons (USFWS 1995b). In the Huachuca Mountains, many spotted owl nest sites were found in Madrean pine-oak woodland with montane conifer species and some broadleaf riparian component (Duncan 1991). Cliffs are present at

some sites and used for nesting. Fort Huachuca is in the Basin and Range-West Recover Unit (RU) (USFWS 1995b) and within this unit spotted owls have used rocky canyons in several forest types at elevations ranging from 3,690 to 9,610 feet above MSL. Below 4,264 feet, spotted owls were found in steep canyons containing cliffs and stands of live oak, pine, and broad-leaved riparian vegetation (Ganey and Balda 1989). Above 5,904 feet, spotted owls were found in mixed conifer and pine-oak forests (USFWS 1995b).

There are eight Protected Activity Centers (PACs) on Fort Huachuca. PACs are areas of no less than 600 acres (1 sq. mi.) that enclose the best owl habitat with the nest or activity center near the center. There are also Inventory Areas (IAs) on Fort Huachuca which are potential foraging, nesting or roosting habitats. There are 4,270 acres (7 sq. mi.) delineated as Mexican spotted owl PACs currently on Fort Huachuca. All eight PACs occur in the higher elevations of the Fort in the Huachuca Mountains. During 11 years of monitoring, occupancy for PACs ranged from 25 % to 75%. Reproductive output has ranged from 0% to 66 % over the same period (EEC 2001).

### 6.3 SPECIES OF CONCERN

Species of concern are those species designated as such by the USFWS or designated by the State of Arizona as a Wildlife Species of Concern. Seventeen species of concern occur or have the potential to occur on Fort Huachuca and species associated with grasslands include the Huachuca golden aster (*Heterotheca rutleri*), desert massasauga (*Sistrurus catenatus edwardsii*), Mexican long-tongued bat (*Choeronycteris mexicana*), and yellow-nosed cotton rat (*Sigmodon ochrognathus*). Species of concern that could occur in the oak woodlands include the Huachuca golden aster, Arizona ridge-nosed rattlesnake (*Crotalus willardi willardi*), buff-breasted flycatcher (*Empidonax fulvifrons*), Mexican long-tongued bat, and yellow-nosed cotton rat.

Huachuca Golden Aster. The Huachuca golden aster is a federal species of concern and has no state status. It forms yellow flowers that bloom from July to October. It is found in extreme southeastern Arizona in grasslands and oak savanna including in road cuts and at disturbed sites. It grows at elevations 4,500 to 6,500 feet above MSL and is known from only 11 locations (AGFD 2001a) including Fort Huachuca as well as in a 10 mile zone outside the Fort (USAGFH 2001b).

Desert Massasuga. The Desert massasauga is a state species of concern and has no federal status. It is Arizona's smallest rattlesnake with most adults being less than 18 inches long. It occurs in three separate populations including one in Southeastern Arizona (Stebbins 2003). In Arizona, it is found principally in tobosa (*Hilaria mutica*) grasslands along sloping bajadas with surface rocks at elevation 4,400 to 4,700 feet above MSL (AGFD 2001b). It is currently known from two localized populations in Southeastern Arizona in the San Bernardino and Sulphur Springs valleys. There are unsubstantiated records of the species occurring on Fort Huachuca (AGFD 2001b). The elevation data indicates the desert massasauga occurs primarily in the lower slopes of the Huachuca Mountains on Fort Huachuca indicating it could occur in areas dominated by grasslands.

Arizona Ridge-nosed Rattlesnake. The Arizona ridge-nosed snake is a state species of concern. This small mountain rattlesnake occurs only in extreme south central Arizona in isolated mountain ranges. It is found in oak woodlands and conifer forests especially in mesic canyon bottoms with canopy. It is infrequently found in high grasslands bordering woodlands (AGFD 2001c). It is known to occur in Huachuca Mountains (AGFD 2001c) as well as on Fort Huachuca (USAGFH 2001b).

Buff-breasted Flycatcher. The buff-breasted flycatcher is a federal and state species of concern and, as indicated above, a bird species of conservation concern. It breeds from southeastern Arizona and central western New Mexico down into Mexico (AGFD 2003a). It can be found during the breeding season in open stands of pine or oak usually with an open understory of grass and small trees (Latta et al 1999). It has been recorded from the Huachuca Mountains (AGFD 2003a) as well as on Fort Huachuca (USAGFH 2001b).

Mexican Long-tongued Bat. The Mexican long-tongued bat is a federal and state species of concern. Its range in Arizona is in the Southeastern portion of the state and this is considered the extreme northern limit of its range. This species is sensitive to human disturbance especially at its roosts (AGFD 2003b). However, it seems less wary of humans during foraging as evident by close encounters with humans at hummingbird feeders (Lee and Clark 1993). The Mexican long-nosed bat can be found in the oak and juniper woodlands and generally occur between elevations 4,000 to 6,000 feet above MSL. Its food habitats are similar to the lesser long-nosed bat in that agaves are the primary food source in the project area (AGFD 2003b). This species occurs on Fort Huachuca and in a 10 mile zone around the Fort (USAGFH 2001b).

Yellow-nosed Cotton Rat. The Yellow-nosed cotton rat is a federal species of concern and has no state status. They are typically closely associated with the Fulvous harvest mouse (*Reithrodontomys fulvescens*) and southern pocket gopher (*Thomomys umbrinus*) and may live in abandoned pocket gopher tunnels. They are more active during the day then at night. The distribution of the yellow-nosed cotton rat is limited to southeastern Arizona. It is found in grassy, rocky slopes in the oak belt between elevations 3,000 and 8,000 feet above MSL. The grass cover is usually sparse but interspersed with species such as agave and yucca to provide cover (Hoffmeister 1986). This species has been recorded from Fort Huachuca and also within 10 miles (16 km) of the Fort (USAGFH 2001b). In addition, it was observed on Fort Huachuca during a recent small mammal sampling in semi-desert grasslands on the South Range (O'Dell 2004).

## **7 HISTORICAL AND CULTURAL RESOURCES**

### **7.0 BASELINE CONDITIONS**

By law, cultural resources are defined as those which are afforded special legal status due to their historic value or their reflection of a specific ethnic culture. Legal status is established through such laws as the National Historic Preservation Act (NHPA), The North American Graves Protection and Repatriation Act, the Archeological Resources Protection Act, the American Indian Religious Freedom Act, 36 CFR 79, and Executive Order 13007.

The USPB contains evidence of thousands of years of human habitation. Archeological sites spanning over 12,000 years abound in the region. Numerous excavation sites document the extent and characteristics of these past cultures located in the area. Three Clovis mammoth kill sites have been found and excavated within 30 miles of the Fort.

As of 2004, approximately 50,000 acres of Fort Huachuca (or 68% of the installation) has been surveyed for the presence of prehistoric and historic archeological sites. Out of this area 328 sites have been recorded (234 are prehistoric sites, 39 are historic, and 55 are both prehistoric and historic). Historic considerations include associations of structures or locations with the Apache Scouts and Buffalo Soldiers. A comprehensive description and data base for these sites is contained in the 2003 Integrated Cultural Resources Management Plan (ICRMP) for Fort Huachuca (cited as Desert Archeology 2003).

Numerous property types at Fort Huachuca meet the eligibility criteria for inclusion on the National Register of Historic Places (National Register) (Desert Archaeology 2003). These include, but are not limited to, prehistoric archeological sites; historic-period archeological sites; historic-period military buildings and structures; prehistoric and historic cultural landscapes; traditional cultural properties and sacred sites; and documents, photographs, and other records associated with these. The inventory is incomplete, since all prehistoric and historic-period sites, buildings, structures, landscapes, and records have not been identified. Additionally, buildings, structures, and records considered historic in age are constantly changing as additional properties and records become old enough to be considered for eligibility.

## **7.1 PRECONTACT ARCHEOLOGICAL SITES**

There are 234 known archeological sites on the Fort (Desert Archaeology 2003); this includes sites from the precontact era as well as sites of an unknown age. This data is derived from the ASM Archeological Records Office and uses the ASM's standard terminology to site types, components, and cultural affiliation. However, since the Fort has not been completely surveyed, there are undoubtedly more archeological sites. The identification, evaluation, and preservation of the archeological sites are significant parts of the proposed cultural resource management plan for Fort Huachuca.

## **7.2 HISTORIC-PERIOD BUILDINGS AND STRUCTURES**

Fort Huachuca has hundreds of historic-period buildings and structures that date to various important periods in the Fort's history: the initial construction of the Fort during the 1880s, the expansion of the Fort during the 1910s, and the rapid expansion associated with troop training and housing during the late 1930s and early 1940s. The Fort was deactivated in 1947 and reactivated in 1951. Deactivated again in 1953, the Fort was briefly used by the Arizona Game and Fish Department, but it was reactivated again in 1954.

The Fort Huachuca Historic District is a registered National Historic Landmark (NHL), and as such, raises the level of responsibility of the Fort concerning maintenance and repair. The historic district, which was redefined in 1993, is composed of 65 contributing and 21 non-contributing buildings that comprise the Old Post section of the Fort. These are adobe, timber-frame, and other constructions dating from the 1880s through the 1930s. The historic district covers over 57 acres. The historic district was nominated for its contributions to four major themes (Desert Archaeology 2003):

- The Fort's contributions to the Indian Wars of the late-nineteenth century;
- The Fort's participation in the experimental heliograph network;
- The Fort's participation in the Mexican border campaigns from 1880-1920; and
- The Fort's position as the foremost center of African-American military service in the Army.

Fort Huachuca is the last surviving example of the architectural and construction techniques used for military buildings and structures in the West. Further, it is also the only military site in Arizona where such a large number of well-preserved buildings are intact. That these buildings and structures are still in active use is a major reason the historic district is the primary tourist attraction on the Fort. Maintenance of the NHL has long been the primary focus of cultural resource management on the Fort.

## **7.3 TRADITIONAL CULTURAL PROPERTIES AND SACRED SITES**

Traditional cultural properties (TCPs) are defined by the National Park Service Bulletin No. 38 as a place eligible for inclusion on the National Register because of its association with cultural practices and with beliefs that are rooted in the history of a community and are important to maintaining the continuity of the community's traditional beliefs and practices (Desert Archaeology 2003). To date, the Rappell Cliffs Pictograph site, the Garden Canyon Pictograph site, and the Garden Canyon have been identified as sacred sites and TCPs to cultural resource managers on Fort Huachuca by federally recognized tribes, the White Mountain Apache and the Tohono O'odham Nation. However, given the privacy issues involved and the tribes' natural reluctance to identify sacred places to outsiders, it can be assumed other sacred places exist on the Fort.

## **7.4 PALEONTOLOGY**

AR 200-4 considers paleontological remains as part of the cultural resources of an installation. Paleontological remains are the fossilized remains of extinct animals and plants. To date, a small number of paleontological remains have been found within the boundaries of Fort Huachuca. The possibility exists, therefore, for additional paleontological specimens to be located within the Fort's boundaries.

## **7.5 PROGRAMMATIC AGREEMENTS**

Currently, Fort Huachuca has one programmatic agreement with the Arizona State Historic Preservation Officer (SHPO). The 2001 Memorandum of Agreement on Army Family Housing at Fort Huachuca among the DOD, the National Conference of State Historical Preservation Officers, the Advisory Council, and the Arizona SHPO concerns demolition and replacement of 1950's through 1970's vintage army family housing. Another programmatic agreement (PA), along with possible multiple Memoranda of Agreement (MOA), are currently under negotiation between the Arizona SHPO and Fort Huachuca and concerns maintenance and repair of historic adobe housing. No completion dates have been set for the agreement(s).

## **8 TRANSPORTATION AND CIRCULATION**

### **8.0 GROUND TRANSPORTATION**

Access to Fort Huachuca is gained through one of three gates: Main Gate, East Gate, and West Gate. The West Gate serves a low volume of traffic via a paved road that connects to SR 83. The East Gate and Main Gate are located along SR 90 and handle the remainder of Fort traffic.

Traffic congestion in the local area is minor and primarily associated with commuter traffic. The road network on the Fort was improved to accommodate construction and increased traffic associated with previous base realignment actions (USAGFH 2001a).

Outside the cantonment area there is a large network of roads and trails that provide access to the ranges. These roads and trails vary in size, composition, and condition. The use and regulation of the roads within the ranges are delineated in Fort Huachuca Regulation 385-8, Range and Training Area Operations (USAIC, FH 2001). Activities on the ranges are coordinated and pre-approved by Range Control.

Range Control identifies the type of traffic permitted on and off existing roads and trails in the different training areas. The roads and trails within all training areas proposed for development (India, Juliet, Lima, Papa, Uniform, and Victor) and the proposed MRC evaluated in this EA are suitable for foot and wheel traffic on the roads/trails and foot traffic only off road/trail. The training areas within the East Range (Alpha, Bravo, Delta, and Foxtrot) are suitable for foot, wheel or tracked vehicles on road/trail. Training Areas Alpha, Bravo, and Foxtrot are only suitable for foot traffic off road/trail, while Delta is suitable for foot, wheel, or tracked traffic off road/trail (Fort Huachuca Range Control 2001).

### **8.1 AIRSPACE AND AIRSPACE MANAGEMENT**

There are numerous runways or airstrips on Fort Huachuca: Rugge-Hamilton Runway, former Pioneer Runway, Demonstration Hill Airstrip, Hubbard Assault Airstrip, the East Range Airstrip, and LAAF. Aviation activities at these facilities include fixed-wing piloted aircraft training, rotary-wing piloted aircraft training, and UAV testing and training.

LAAF is a joint-use airport that supports both military and civilian uses. Sierra Vista Municipal Airport, which supports the civilian aviation, is concentrated at the northern side of the airfield and is accessible directly from SR 90. Military operations are concentrated on the southern side of the airfield and are accessible from Brainard Road, Gerstner Road, and Arizona Street on the Fort. LAAF facilities and services include 24-hour crash/rescue, three lighted runways, ATC tower, approach radar, precision approach radar, and airport surveillance radar. Navigational aids include instrument landing system, very high frequency omni range, and a non-directional beacon. The main runway is equipped with a visual approach slope indicator, and the secondary runway is equipped with a precision approach path indicator (Fort Huachuca 2000).

ATC is in operation at LAAF from 7:00 a.m. to 5:00 p.m., Monday through Friday (as of 1 November 2004) (George Bennett, personal communication, 12 October 2004), and during its operation, aircraft are

not allowed to enter the airport's airspace until given clearance by the tower. Airspace restrictions are scheduled regularly at LAAF, with the airspace being restricted at most times (George Bennett, personal communication, 12 October 2004). LAAF airspace includes a horizontal radius of 4.3 statute miles, extending from the surface up to 7,200 feet above MSL (USAGFH 2000b).

Restricted airspace is an area within which aircraft flight is subject to restrictions. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas are published in Federal Register 14 CFR Part 73 (USAGFH 2000b). There are four restricted airspace designations in the vicinity of Fort Huachuca: R-2303A, R-2303B, R-2303C, and R-2312. Restricted areas R-2303 A-C are designated by the FAA as joint use with Fort Huachuca being the Using Agency and the Albuquerque Air Route Traffic Control Centers as the Controlling Agency. R-2312 contains a tethered air balloon and is jointly operated by the U.S. Customs Department and the U.S. Air Force. These areas are depicted on sectional charts, Visual Flight Rules (VFR) Terminal Area charts, and Enroute Low Altitude charts. Table 3 summarizes the airspace restrictions.

**Table 3 Restricted Airspace at Fort Huachuca, Arizona**

Restricted Area	Airspace Area	Active Times
R-2303A (Excludes LAAF)	Surface to 15,000 feet	7:00 a.m. to 5:00 p.m. Monday through Friday
R-2303B	8,000 feet to 30,000 feet	7:00 a.m. to 5:00 p.m. Monday through Friday
R-2303C	15,000 feet to 30,000 feet	Intermittently, with 24-hour advance notice
R-2312	Surface to 15,000 feet	Continuously

There are currently eleven ATC personnel with two additional personnel to be hired in November and five more before the end of 2004. Once the new personnel are trained and qualified, the tower will likely expand operations to 16 hours per day, Monday through Friday (George Bennett, personal communication, 12 October 2004).

LAAF consolidated radar and tower traffic counts for 2001-2003 are presented in Table 4. The table indicates there was a decline in UAV activity in 2002. This change reflects the relocation of the Pioneer UAVs to Pensacola, Florida in 2001. UAV activity in 2003 increased by 1,744 aircraft traffic counts over 2002 and is 1,265 greater than in 2001. UAVs accounted for approximately 22.5 percent of all military operations at LAAF in 2001 and increased slightly to approximately 23 percent in 2002. Baseline UAV activity in 1999 provided in the previous UAV EA (USAGFH 2000b) shows approximately 22 percent of the total military aircraft counts at LAAF were UAVs. In 2003, UAV operations accounted for approximately 24 percent of the 95,563 military aircraft traffic counts, and 19 percent of the 121,819 total traffic counts at LAAF (including air carrier and general aviation).

**Table 4 LAAF Consolidated Traffic Count 2001 – 2003**

Type	2001	2002	2003
Air Carrier	6,778	6,046	6,519
General Aviation	23,336	23,086	21,701
Military (UAV)	95,563 (21,508)	91,213 (21,029)	93,599 (22,773)
Total	125,677	121,012	121,819

Source: LAAF ATC.

UAV flight activities are ongoing and increasing at Fort Huachuca. Currently the operations consist primarily of the Hunter and Shadow UAVs. In 2003, approximately 1,216 total UAV flight hours were logged. Of these hours, use of the Hunter accounted for about 344, and 872 were for the Shadow. As of September in 2004, the Hunter has been flown for approximately 385 hours and the Shadow for 1,138

hours. Currently, Hunter operations run approximately 12 hours per day, consisting of one 6-hour range flight and either a 4.5 hour range flight or a 3-4 hour local pattern flight per day. It is planned at this time to extend Hunter operations to 14-20 hours per day, which would allow for 12-18 flights per day. Shadow operations consist of five 5.5-hour flights per day or two 4.5-hour flights and an aircraft “pop and stop”, which launches and recovers four times per day. Shadow operations occur five days a week for approximately 16 hours per day and pop and stops occur three times a week. In February, Shadow operations will increase to two full shifts (16 hours of operation). This will entail six flights per day of 5.5 hours each three days per week, and four range flights of 5.5 hours each two pop and stops with four launch and recoveries each (total of eight) per day twice a week. In addition, the Predator JTOBS is officially stationed at Fort Huachuca with two Predators. Since stationing at the Fort, they have been in various theater operations and have not actually been used at the installation.

In addition to restricted airspace limitations, Federal Aviation Administration (FAA) Advisory Circular AC 91-36, VFR Flight Near Noise-Sensitive Areas, requests that pilots maintain a minimum altitude of 2,000 feet (610 m) above national parks, forests, primitive areas, wilderness areas, recreational areas, national seashores, national monuments, national lakeshores, and national wildlife refuge and range areas (USAGFH 2000b). The surface of a national park area is determined to be the highest terrain within 2,000 feet (610 m) laterally of the route of flight or the upper-most rim of a canyon or valley. LAAF is located within 33 nautical miles (NM) of five conservation, wilderness, and national monument areas, including San Pedro Riparian NCA (6 NM east), Miller Peak Wilderness Area (8 NM south), Mt. Wrightson Wilderness Area (22 NM west), Rincon Mountain Wilderness Area (29 NM north), and Saguaro National Monument (33 NM north).

## **9 AIR QUALITY**

### **9.0 CLIMATE**

The climate of Cochise County is moderated by both land elevation and the physical characteristics of the basin and range topography. The average high summer temperature is 88° Fahrenheit (F). The daily mean maximum temperature for the warmest month, June, is 91° F. Although temperatures above 100° F do occur, they do not persist for any length of time. The average winter low temperature is 32° F. Average winter daytime high temperatures in the basins vary between 55° and 60° F. However, temperatures below freezing do occur a few days a year between November and February. Maximum wind velocities of 20 to 35 miles per hour blowing from the west/southwest are quite common in the area during the months of March through May (USAGFH 2001a). The average wind velocity is 7 miles per hour (USAGFH 2002).

Cochise County receives 12 to 30 inches of rainfall yearly, which is elevation dependent, with more rainfall at higher altitudes. This precipitation is seasonal and distributed somewhat unevenly over the area. The summer "Monsoon" rainy season is caused by moist tropical air masses from storm centers in the Gulf of Mexico moving into southeastern Arizona from July through September. Ground surface heating and the uplift of these warmed air masses over the various mountain ranges in the County produce localized, high intensity thunderstorms with heavy rains and strong winds. These storms can cause flash floods, structural damage, and power failures. Summer storms account for up to 65 percent of the annual rainfall in the region. Winter storms typically occur in December through February as a result of large frontal systems originating from middle latitude cyclonic activity in the Pacific Ocean. About 25 percent of the annual precipitation in the vicinity of Fort Huachuca is derived from winter storms. Although the seasonal rainfall patterns are well established in Cochise County, winter moisture is highly variable from year to year, whereas summer rainfall volume and occurrence is much more predictable.

### **9.1 AIR QUALITY**

Cochise County is in the Southeast Arizona Intrastate Air Quality Control Region, which also includes Graham, Greenlee, and Santa Cruz counties. The area lacks heavy industry or dense population centers,

1 and prevailing wind patterns disperse local emissions from various human activities (e.g. automobiles,  
2 aircraft). Most of Cochise County, including the Fort Huachuca-Sierra Vista area, has been designated as  
3 an attainment area for routinely meeting the established national air quality standards. Douglas, located  
4 approximately 50 miles southeast of the Fort, is in non-attainment of primary sulfur dioxide standards  
5 (EPA 2004). In addition, Douglas and Paul Spur, located approximately 40 miles southeast of the Fort,  
6 are both in moderate non-attainment of PM<sub>10</sub> standards (EPA 2004). Trans-border pollution and high  
7 wind, which blows large amounts of dust from dirt roads and bare agriculture fields are large contributors  
8 to the PM<sub>10</sub> in these areas.

9 As of 2003, Fort Huachuca had annual emissions of nitrogen oxides (NO<sub>x</sub>) (191 tons/year) and CO (135  
10 tons/year) that exceeded established major source thresholds (100 ton/year) set by Arizona Department of  
11 Environmental Quality (ADEQ) and EPA. Emissions for all other criteria pollutants and hazardous air  
12 pollutants are below established threshold levels. Per 40 CFR 70 and the Arizona Administrative Code  
13 Title 18, Chapter 2, Fort Huachuca has applied to ADEQ for qualification as a Class II synthetic minor.  
14 Issuance of a permit has been pending since January 2000, and information was updated in January 2003  
15 to reflect changes at the facility that occurred in the interim period. The Fort is acting in accordance with  
16 the conditions and limitations set forth in the permit application. As a Class II synthetic minor, the Fort  
17 voluntarily limits the use of natural gas fuel and the operating hours of engine generator sets to limit  
18 emissions of NO<sub>x</sub> and CO. These limitations allow the Fort to stay below the established thresholds for  
19 emissions and avoid becoming a Title V source.

20 Natural gas fuel consumption on virtually all boilers and heaters is restricted to 40 percent of the  
21 maximum fuel consumption possible. Hot water heaters, which are used year around but only during  
22 business hours, have been reduced 25 percent. No fuel restrictions have been placed on two boilers that  
23 operate year around. New boilers and hot water heaters may be added at the Fort as long as they are  
24 smaller units (between ½ and ¾ million BTU) (Randee Sieracki, Personal Communication, 12 October  
25 2004). In such cases, a form is filed with ADEQ to notify them of the change. Typically, new construction  
26 is replacing older facilities, which allows for new technology and more efficient units to be used in place  
27 of previous units and increases are offset as much as possible.

28 Engine generator sets are located in various buildings throughout the Fort. Most of these sets are  
29 emergency generators, and under EPA policy are limited to 500 annual hours of operation each. Fort  
30 Huachuca further limits the use of these generators to 250 hours of operation each. New generators are  
31 not typically allowed at the Fort (Randee Sieracki, Personal Communication, 12 October 2004). There are  
32 a number of portable engine generator sets at Fort Huachuca. According to 40 CFR Part 89, these sources  
33 fit within the definition of non-road engines and are not considered stationary sources. ADEQ R18-2-324  
34 requires owners of portable sources to obtain permits from the county, if the county has established a  
35 local air pollution control program. Cochise County does not currently have a program. Further, portable  
36 engine generator sets are frequently used off the installation. At the time of this writing many of the Fort's  
37 generator sets are in Iraq and are clearly not contributing to total emissions at the Fort (Randee Sieracki,  
38 Personal Communication, 12 October 2004). The use of fuel cells in lieu of generators has been reviewed  
39 by ADEQ and determined to be acceptable on an unlimited basis. Fuel cells can generate energy using a  
40 chemical reaction, which results in virtually no emissions. The cost for fuel cells has thus far been  
41 prohibitive at the Fort (Randee Sieracki, Personal Communication, 12 October 2004).

## 42 10 NOISE

### 43 10.0 BASELINE CONDITIONS

44 U.S. Army policy is to comply with all federal, state, and local requirements on noise control, unless  
45 doing so would conflict with the Army's mission. Army Regulation (AR) 200-1 implements all federal  
46 laws concerning environmental noise for Department of the Army activities. These include the Quiet  
47 Communities Act of 1978, the Noise Control Act of 1972, and federal regulations, such as EPA's

Procedures for Reporting Proposed Pollution Abatement Projects for Federal Facilities. The primary strategy of the Department of the Army is to protect humans and animals from environmental noise impacts through land use planning. Three noise zones are identified in AR 200-1: Zone I (Acceptable), Zone II (Normally Unacceptable), and Zone III (Unacceptable). Housing, schools, and medical facilities are considered noise-sensitive land uses under this regulation. Table 5 presents an assessment of land use planning for Army environs.

**Table 5 Land Use Planning Guideline**

Noise Zone	Population Highly Annoyed	Noise Limits in L <sub>dn</sub>
I	<15%	<65 dBA
II	15-39%	65-75 dBA
III	>39%	>75 dBA

Ldn = day-night sound level.

Source: U.S. Army Center for Health, and Preventive Medicine, 1994.

Major noise sources on Fort Huachuca include weapons blasts, vehicle traffic, and airfield operations. Weapons blasts involving the use of small arms and explosives occur during training exercises. Aircraft that regularly operate out of LAAF include C-130, A-10, F-16, UH-60, RC-12, OH-58, AH-64, and UH-1. The noise generated by both weapons use and aircraft operations only exceeds 65 dB Ldn over undeveloped areas within Fort (Coffman 2002).

Projected 2005 noise contours for LAAF were prepared for the *Sierra Vista Municipal Airport - Airport Master Plan* (Coffman 2002). The unacceptable (Zone III) and normally unacceptable (Zone II) noise zones are compatible with the land uses on Fort Huachuca, and do not extend beyond the Fort's boundary.

## **11 HAZARDOUS WASTE, SUBSTANCES, AND MATERIALS**

### **11.0 HAZARDOUS MATERIALS**

Hazardous material storage follows the National Fire Prevention Association standard codes, and is subject to inspection by both the Installation Safety Office and the Fire Department. Fort Huachuca operates a Hazardous Material Control Center, which allows for collection and withdrawal of usable hazardous materials on the installation. This center was designed to facilitate a reduction in the purchase and disposal costs associated with hazardous materials and wastes. The Fort implements several environmental plans and programs for hazardous waste management and monitoring.

### **11.1 HAZARDOUS WASTES**

Fort Huachuca's *Installation Hazardous Waste Management Plan* provides the necessary procedures to achieve compliance with regulations regarding the accumulation, storage, transportation, and disposal of hazardous wastes generated by various organizations on the Fort. Fort Huachuca is a large quantity generator of hazardous wastes, but does not maintain a Part B permit to operate a treatment, storage, and disposal facility (TSDF) under Resource Conservation and Recovery Act (RCRA). The Fort operates one 90-day accumulation point and approximately several satellite accumulation points. Transportation to an approved TSDF is through contracts established by the Defense Reuse and Marketing Organization (DRMO). The DRMO ensures that transporters are qualified, maintain required permits and licenses, and manifest the waste off the installation to a permitted TSDF.

Fort Huachuca's *Installation Spill Contingency Plan* (ISCP) describes the response procedures for an accidental spill of hazardous substances or petroleum, oil, and lubricants (POL) (USAGFH 2003). In the case of a hazardous waste release, the Fort Huachuca Fire Department has first responder responsibilities at Fort Huachuca, with the Director of Installation Support's maintenance contractor responsible for

cleanup once imminent danger to life and health has passed. Under agreement with Cochise County and the City of Sierra Vista, backup for response to accidental spills of hazardous substances or POL on the Fort is available.

## **11.2 MUNITIONS**

Fort Huachuca transports, stores, and uses munitions. Munitions may be classified as hazardous materials under the Hazardous Materials Transportation Act depending upon what they contain. However, unless expired, or discarded military munitions generally do not meet the RCRA definition of hazardous waste. Fort Huachuca does not maintain stockpiles of non-conventional munitions (i.e. chemical, nuclear, etc.).

The Army has generated rules, regulations, and guidance manuals detailing procedures and practices for handling, storing, and disposing of munitions. All on-post activities comply with existing Army guidance documents, and federal and state regulations (including RCRA and ARS Title 49). Army guidance documents relevant to the handling, storage, and disposal of munitions include the U.S. Army, 415S.19-R-I, Hazardous Commodities Storage; DEQPM 80-5, U.S. Army Hazardous Materials Disposal Policy; and DEQPM 80-8, RCRA.

## **11.3 FUELS**

Military vehicles operating on Fort Huachuca use a combination of unleaded gasoline, diesel fuel, aviation gasoline, and JP8 jet fuel. Bulk storage units have been located on-post since the early 1990s. Existing storage units include both above and below ground facilities. On-post bulk storage units are required for both diesel and gasoline fuels. The large capacity storage units are located above ground, and have associated above and below ground pipelines and distribution systems.

The total quantity of mobility fuels used on the Fort has a minimal effect on the fuel supply and distribution system in southeastern Arizona. The total annual consumption of petroleum fuels represents less than two days of production of a typical refinery. This quantity can be delivered using standard tank trucks at the rate of slightly more than one truck per workday (USAGFH 2000b).

# **12 POPULATION, HOUSING AND ECONOMIC CONDITIONS**

## **12.0 POPULATION**

Population data published by Fort Huachuca comes from a number of separate databases. These databases, to include federal government systems and government contractor operated systems, do not cross-reference their data. Several years ago, Fort Huachuca became aware that the existing method of population reporting, from these various databases, led to the double counting of some individuals who may be counted under several reportable categories. An example of this duplication would be a military family member who lives on Fort Huachuca, who is also a government civilian or contract worker on the Fort. This person would be counted twice, as a military family member and as a government civilian/contractor employee. At this point, an additional 1.3 family members would be attributed to them in the off-post population, based on the assumption that all government civilians and contractor employees live off of the installation in Sierra Vista, with a 2002 census average household size of 2.55. The individual would then account for 3.55 people in the local community using these traditional methods and assumptions (USAIC, FH 2003b).

In an effort to more accurately estimate the Fort's population and the number of family members related to on-post employees, Fort Huachuca hired a contractor to conduct a survey to gather appropriate population data. Care was taken to eliminate duplicate surveying of the same household. The survey findings revealed various examples of double counting, such as:

- 21.7% of the military personnel are also household members of other employees working at the Fort. This double count alone accounts for an approximate 8% over count of the noonday population; and
- 18.8% of current government civilian employees are also counted as retired military living in the Sierra Vista area (USAIC, FH 2003b).

Fort Huachuca's employee population in FY03 was 11,939 and included assigned military, military students, civilian, and contractor personnel. Many of the military assigned to Fort Huachuca live on post in bachelor quarters, barracks, or family housing. Other military personnel and civilian employees live in neighboring Sierra Vista and Huachuca City or in other communities in Cochise County. Just under 5% of Fort Huachuca's employees live outside the Sierra Vista subwatershed area (USAIC, FH 2003b).

Current approximated TDA for the USAIC mission at Fort Huachuca is 3350 personnel, with current baseline of 2800 personnel for an effective baseline TDA of 84%.

## 12.1 HOUSING

The Fort has 1,652 family housing units located on post. Of that total 212 units are designated as officer's quarters, and 1,440 units are listed as adequate listed quarters (Fort Huachuca 2003). No off-post family housing units are currently being leased. In addition to these quarters, there are 250 transient bachelor/guest quarters and 3,151 troop billeting spaces. On-post housing is not sufficient to house all military personnel. Military personnel and their families may live off-post, either making real estate purchase or renting property. The information in Table 6 is based on data maintained by Fort Huachuca's Housing Division (USAIC, FH 2003b).

**Table 6 Military Off-Post Residency**

	September 2001	September 2002	September 2003
Own Home	39	230	296
Rent Home	308	685	449
Own Manufactured Home	0	30	7
Rent Manufactured Home	6	6	16
Rent Apartment	1,239	895	634
<b>TOTAL</b>	<b>1,592</b>	<b>1,846</b>	<b>1,402</b>

Source: USAIC, FH 2003b.

## 12.2 ECONOMIC CONDITIONS

Fort Huachuca is a major employer in southern Arizona. In FY03 Fort Huachuca provided 12,193 jobs in Cochise County. This consisted of 11,939 directly employed and 254 contractors employed off-post (USAIC, FH 2003b).

Fort Huachuca, just like civilian communities, is a consumer of goods and services in support of its day-to-day operations. In addition to those goods and services that are common to civilian communities. Fort Huachuca is a consumer of high technology industrial goods because of the intelligence-related and information system missions and activities located there. Fort Huachuca expended \$941.2 million in FY03 when pay and other categories of expenditures are added to goods and services; 53.7% (659.0 million) was expended in Arizona. Overall expenditures by the Fort show a decrease of \$182.6 million from FY02 to FY03, while expenditures in Arizona reflect a \$56.0 million increase from FY02 to FY03 (USAIC, FH 2003b).

Fort Huachuca expended \$281.8 million of the purchase of goods and services in Arizona during FY03. Fort Huachuca's purchases outside Arizona amounted to \$282.2 million, a 46.8% decrease from the 520.8 million in FY02. In FY03, Fort Huachuca spent \$622.6 million in Cochise County, which is an increase of 9.3%, or \$52.9 million, from the previous year's expenditures (USAIC, FH 2003b).

## **13 HEALTH AND SAFETY**

### **13.0 LAW ENFORCEMENT**

Police services and law enforcement are provided off-post by community police forces and the Arizona Department of Public Services. On Fort Huachuca, the law enforcement division of the Directorate of Public Safety is primarily responsible for the security of the installation and enforcement of rules, regulations, and laws governing the Fort Huachuca community.

### **13.1 MEDICAL SERVICES**

Cochise County is served by six hospitals located in Benson, Bisbee, Wilcox, Douglas, Sierra Vista, and Fort Huachuca. The two facilities most likely to be affected by changes that could result from the Proposed Action or alternatives due to their location are the Sierra Vista Regional Health Center (SVRHC) and Raymond W. Bliss Army Health Center. The SVRHC is located in Sierra Vista is an acute care facility with 82 beds. In addition, the facility has 79 physicians and allied health professionals on the active medical staff, and more than 7,600 annual patient visits (SVRHC 2004). Raymond W. Bliss Army Health Center is one of the largest, best equipped, and most modern health care facilities in Cochise County and provides emergency services and outpatient services for medical, surgical, and pediatric patients (Fort Huachuca 2001). Emergency medical evacuation to Tucson by air from either facility takes approximately twelve minutes.

### **13.2 FIRE PROTECTION**

Fire protection services are provided under a mutual assistance agreement between Fort Huachuca, Sierra Vista, Cochise County, and U.S. Forest Service (USFS). Sierra Vista maintains two fire stations. Cochise County fire districts respond to county calls and can provide additional assistance to other agencies when needed. The Fry Fire District maintains a station within Sierra Vista as well as in surrounding parts of the county.

The USFS maintains and operates additional fire suppression facilities that are available to respond to forest and range fires within Coronado National Forest and adjacent areas, including lands within Fort Huachuca, pursuant to a cooperative fire agreement between the installation and the USFS. The USFS seasonally maintains an aviation fire suppression support facility (tanker base) at LAAF. The purpose of the tanker base is to provide logistical support and fire suppression supplies necessary for regional fire-fighting activities. Additional resources include three 200 gallon/4 wheel drive engines, one 600 gallon/2 wheel drive engine, and one fire prevention technician and fire lookout on Red Mountain (USFS 2000). In January 2004, the Coronado National Forest engaged in amending its 1986 Forest Land and Resource Management Plan with a Wildland Fire Amendment. This amendment updates the existing wildland fire management direction to comply with the 2001 Federal Wildland Fire Management Policy. The proposed changes primarily address lightning-ignited fires within the forest. Under the amendment, fire managers would be permitted to manage and not necessarily suppress lightning caused fires to help reach management goals. All human-caused wildfires would continue to be suppressed using appropriate suppression response strategies (USFS 2004).

Fort Huachuca currently maintains three stations, two within the cantonment area and one at LAAF. New stations on the West Range near the UAV complex area and at LAAF are being considered. Along with these new stations would come vehicles, firefighters, and equipment. In addition, crash trucks at LAAF

are available for responding in the event of an aircraft crash. According to FAA, existing crash trucks and staffing at LAAF are insufficient. The crash trucks are at the end of the acceptable age limit and are not of sufficient capacity based on the size of the aircraft that use the facility. In addition, the crash trucks are only equipped with a single fire suppression agent (foam) when two are required. This is a result of the removal of all halon from the installation (Peter Nussbickel, Personal Communication, 12 October 2004). Additional crash response personnel are also needed (Peter Nussbickel, Personal Communication, 12 October 2004).

Range Control is responsible for regulating and coordinating activities on the ranges, and is supported by Law Enforcement Division and the Fire Department. Law Enforcement is responsible for securing and patrolling the ranges, and the fire department coordinates with Range Control regarding procedures and scheduling of controlled burns, and preventing, fighting and extinguishing range fires. In addition, the Directorate of Installation Support assists in maintaining firebreaks (USAIC, FH 2001). Range Control Standard Operating Procedures and regulations define allowable practices on the ranges and necessary precautions that must be taken. These measures ensure training activities and other uses of the ranges are conducted in a way that minimizes the risk of fire or injury and identifies a course of action should a fire occur. SOPs for the use of pyrotechnics define when and where such materials may be used. These SOPs require that a fire suppression plan be submitted to Range Control and the Fort Huachuca Fire Department no less than 10 days prior to the training event. In addition, the officer in command of the training exercise must obtain a weather report on the morning of the training exercise and advise the Fort Huachuca Fire Department of pyrotechnic use no less than two hours prior to receive a go or no go from the fire station. Use of pyrotechnics can be limited during times of high fire danger and are determined on a case by case basis (USAIC, FH 2001).

Fire history data have been collected at Fort Huachuca since 1973 with a gap from 1975 to 1977. Most areas of Fort Huachuca have experiences no more than one fire greater than one acre in size every ten years. Higher incidences of wildfires occur in Training Area Tango in portions of the area used for live ammunition fire (USAGFH 2002).

## **14 UTILITIES AND SERVICES**

### **14.0 WASTEWATER COLLECTION AND TREATMENT SYSTEM**

The wastewater system at Fort Huachuca consists of collection and treatment facilities. Included in these facilities are a limited number of portable toilets and septic tanks and the components of the sewage system itself: individual sanitary sewers and truck lines, lift stations, force mains, sewage ejectors and Waste Water Treatment Plant (WWTP) #2. WWTP #1 is closed and the ponds are now used as a treated-effluent holding/pumping facility. The Fort's wastewater collection system is primarily a branched gravity flow system, with approximately 95 percent of total flow conveyed by gravity alone. System capacity is 2 million gallons per day (MG/D). Currently the system is operating at .75 MG/D, or 38% of system capacity. Treatment consists of separation of solids to the digester tanks, and processing of the remaining wastewater through a trickle filter process, sand filtration, chlorination, and dechlorination. Portable facilities and individual holding tanks serve isolated facilities and outlying range and training areas.

Fort Huachuca has used treated effluent to water the golf course and a large parade field for three decades. Currently, approximately 40 percent of the installation's treated effluent is used for landscape maintenance at the Golf Course, Chaffee Parade Field, and the Outdoor Sports Complex.

### **14.1 ELECTRICITY**

Tucson Electric Power Company (TEP) furnishes electrical power to Fort Huachuca via a substation near Greely Hall on the Fort. Electricity is delivered from TEP's Vail Substation via a 54-mile long

transmission line. The capacity of the primary transmission line is 138 kV and 46 kV for the main substation. Electricity on the Fort is distributed by overhead and underground transmission lines.

#### **14.2 NATURAL GAS AND PROPANE**

Natural gas and propane are used at Fort Huachuca for space heating and in absorption chillers to provide cooling. Southwest Gas Company furnishes natural gas to Fort Huachuca through two high pressure underground pipelines. Natural gas is then distributed within the installation via a network of buried transmission lines. Propane is produced off-site and transported to the Fort via tank trucks.

#### **14.3 RENEWABLE RESOURCES**

Fort Huachuca has a number of alternative and renewable energy projects. There is one Bergey wind turbine on the West Range and wind data collection equipment on the South Range. Solar energy is used to produce electricity in both grid and non-grid connected photovoltaic systems. The energy generated from these systems is used to heat water for a swimming pool located at Barnes Field House, light the parking lot at the NCO Academy and for domestic use.

#### **14.4 SOLID WASTE DISPOSAL**

There are no active landfills on Fort Huachuca. All refuse except the sludge from WWTP #2 is collected and disposed of under contract at the Huachuca City Landfill. The sludge from WWTP #2 is collected and disposed of under contract at the Cochise County Landfill (Kim Taylor, personal communication, 21 October 2004). A active recycling program for paper, aluminum cans, glass, and various types of plastics exist on the Fort.

#### **14.5 POTABLE WATER**

Groundwater is the source of Fort Huachuca's potable water supply. Details regarding the Fort's groundwater use are in Section 4 of this Appendix.

1

## **APPENDIX B**

2

**SITE SPECIFIC CONDITIONS**

3

**FORT HUACHUCA, ARIZONA**

4

**NOVEMBER 2004**

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testing activities. Patrolling and land maneuvering training is also conducted in this area. Wheeled vehicles are permitted on existing roads in the area but no off-road vehicle travel is permitted. Testing and training sites located in protected agave management areas within this training area adhere to special use regulations as identified for Training Area India (above). On occasion, locations across the area are utilized by training units for setting up bivouacs similar to Training Area India (above) for FTX. One large, (40 acre) permanent bivouac site is located in this area. Training Area Lima is also used for hunting activities. Hunters are required to observe similar restrictions as in Training Area India (above). The area has a picnic area for recreational activities.

#### **1.4 TRAINING AREA PAPA**

Training Area Papa is located on the South Range and covers an area of 3,459 acres (5 sq. mi.). As the general terrain of the area is of the mountainous type, the military activities in the area are generally kept to the relatively flat areas only. This area is primarily used for intelligence and communications training and testing activities. Patrolling and tactics training is also conducted in this area. Wheeled vehicles are permitted on existing roads in the area but no off-road vehicle travel is permitted. On occasion, locations across the area are utilized by training units for setting up bivouacs similar to Training Area India (above) for FTX. The topography of the area contributes to the heavy use of the area for recreational activities. Three picnic areas are located in the Garden Canyon area. Facilities in these recreation areas include play areas, grills, and ramadas. There are numerous hiking and horseback riding trails in this area. Recreational users are prohibited from rock climbing and rappelling. Training Area Papa is also used for hunting activities. Hunters are required to observe similar restrictions as in Training Area India (above).

#### **1.5 TRAINING AREA VICTOR**

Training Area Victor covers a land area of 1,599 acres (2.5 sq. mi.) and has a desert-type terrain. This area is primarily used for intelligence and communications training and testing activities. Patrolling and tactics training is also conducted in this area. Wheeled vehicles are permitted on the existing roads in the area but no off-road vehicle use is permitted. Testing and training sites located in protected agave management areas within this training area adhere to special use regulations as in Training Area India (above). This area contains one Helicopter Landing Area for proficiency and emergency operations. On occasion, locations across the area are utilized by training units for setting up bivouacs similar to Training Area India (above) for FTX. Training Area Victor is divided into two parts for game management: V and V1. Training Area V has a golf course and Golf Course Pond. Hunting is not permitted in this area.

#### **1.6 MOUNTED REACTION COURSE TRAINING**

Approximately .75 miles of the proposed 3.75-mile MRC exists within Training Area Lima with the remaining 3 miles within Training Area Hotel. Conditions in Training Area Lima are provided above. Training Area Hotel covers an area of 4,200 acres (7 sq. mi.). This area is primarily used for intelligence and communications training and testing activities. Wheeled vehicles are permitted on existing roads in the area but no off-road vehicle travel is permitted. Testing and training sites located in protected agave management areas within this training area adhere to similar special use regulations as in Training Area India. On occasion, locations across the area are utilized by training units for setting up bivouacs similar to Training Area India (above) for FTX. Portions of the installation grazing lands are located in this area (see USAGFH 2002). Training Area Hotel is also used for hunting activities. Hunters are required to observe similar restrictions as in Training Area India (above).

#### **1.7 SMALL ARMS FIRING RANGES ON THE SOUTH RANGE**

Small arms qualification and live fire at Fort Huachuca occur on only nine of the seventeen existing live fire ranges in Training Area Tango (Table 1). Firing ranges are used for personnel qualification and

training throughout the year. Live fire does not take place at night on Ranges 2, 3, and 4 during the period July 1 through October 31.

**Table 1 Firing Ranges at Fort Huachuca**

Range	Range Utilization	Maximum Ammo Permitted	Maximum Noise Level At Firing Point
Range 1	Currently inactive	NONE	N/A
Range 2	M-16 Rifle Zero Range with 40 firing points and a target width of 100 meters	5.56mm	156 dbP
Range 3	Small bore multi-purpose range with 15 firing points, and 75 meters maximum range	7.62mm	156 dbP
Range 4	Pistol range complex consisting of a competition firing range with 25 firing points and target distances at 25 and 50 meters (Range 4A), and an US Army Standard Pistol Qualification course consisting of four firing points with target distances from 7 to 31 meters (Range 4B)	.45 cal	162 dbP
Range 5	High explosive hand grenade range with 12 firing points. Currently inactive, due to safety considerations	M67 FRAG (ONLY)	171 dbP
Range 6	Fifty firing points and six firing lines from 100 to 1,000 yards	.50 cal	159 dbP
Range 7	Currently inactive	NONE	N/A
Range 8	Automated record fire range with 10 firing points and target distances from 50 to 300 meters	5.56mm	156 dbP
Range 9	Range 9A serves as a multi-purpose machine gun range with four firing points, Range 9B is used for recoilless rifles	.50 cal, 106mm	160 dbP
Range 10	M-79 and M-203 grenade launcher range. High Explosive (HE) cannot be fired on this range	40mm	154 dbP
Range 11	Currently inactive	NONE	N/A
Range 12A	.50 caliber, 7.62mm and 40mm live fire weapons range. HE ammunition cannot be fired on this range	120mm, .50 cal	160 dbP
Range 12B	Tank gunnery range. HE ammunition cannot be fired on this range	NONE	N/A
Range 12C	Tank gunnery range. HE ammunition cannot be fired on this range	NONE	N/A
Range 13	M-16 marksmanship record fire range with 16 firing positions and targets from 50 to 300 meters	5.56mm	156 dbP
Range 14	Currently inactive Squad attack course	NONE	N/A
Range 15	Currently inactive Platoon attack course	NONE	N/A

## 2 VISUAL RESOURCES

### 2.0 CANTONMENT AREA AND LIBBY ARMY AIRFIELD

There are two visually distinct areas of the Fort surrounded by similar landscapes. The majority of the cantonment area of Fort Huachuca is urban in appearance due to the presence of large administration buildings, testing and training facilities, and hangars and the air traffic control (ATC) tower at Libby Army Airfield (LAAF). The southern portion of the cantonment area is suburban in character, with landscaped areas, smaller structures, and a variety of recreational amenities and housing facilities.

Dominant visual elements include Fort structures, such as administration buildings, housing structures, offices, and other buildings.

## **2.1 TRAINING AREA INDIA**

The foreground and middle ground views of the proposed site are characterized by open grasslands with scattered trees with unpaved roads. Background views are dominated by the Huachuca Mountains to the south, Santa Rita Mountains to the distant west, and Whetstone Mountains to the north.

## **2.2 TRAINING AREA JULIET**

The foreground views at the proposed site include development associated with the Black Tower UAV complex to include administrative buildings, training buildings, air traffic observation tower, and parking areas and associated infrastructure surrounded by open grasslands and valleys extending in a northeast-trending direction. Middle ground views of the proposed site are characterized by open grasslands with scattered trees with unpaved roads contoured by rolling hills and valleys. Background views are dominated by the Huachuca Mountains to the south, Santa Rita Mountains to the distant west, and Whetstone Mountains to the north.

## **2.3 TRAINING AREA LIMA**

Foreground views at the proposed site include a medium-sized metal building surrounded by chain linked fence, utility poles and lines, disturbed earthen parking areas, disturbed grasslands, and scattered trees. Middle ground views are dominated by grassland hills and open areas with scattered trees and improvements. Background views include the Huachuca Mountains to the south and the Whetstone Mountains to the north.

## **2.4 TRAINING AREA PAPA**

The proposed site is located in lower Garden Canyon with foreground and middle ground views dominated by rolling hills, grasslands, scattered trees, and a network of unpaved roads. Background views are limited to the Huachuca Mountains to the west, south, and east with topographic relief obstructing distant views to the north.

## **2.5 TRAINING AREA VICTOR**

Foreground and middle ground views at the proposed site are characterized by rolling hills covered with grasslands, unpaved roads, scattered trees, and other improvements such as a metal lighting shelter. Background views to the west and south are dominated by foothills of the Huachuca Mountains. Background views to the north include open grasslands and Whetstone Mountains on the far distant horizon. Background views to the south of the site are obstructed by rolling hills in the middle ground.

## **2.6 MOUNTED REACTION COURSE TRAINING**

The foreground and middle ground views of the proposed MRC route are characterized by open grasslands with scattered trees with unpaved roads. Background views are dominated by the Huachuca Mountains to the south and Whetstone Mountains to the north.

## **2.7 SMALL ARMS FIRING RANGES ON THE SOUTH RANGE**

The foreground and middle ground views at the various firing ranges include disturbed grasslands and open areas with firing points and various target placement systems and shelters used during live fire events. Background views to the west and southwest include rolling topography of the Huachuca Mountain foothills. Background views to the north include the southern portion of the cantonment area with the Whetstone Mountains on the far distant horizon.

### 3 TOPOGRAPHY, SOILS, AND GEOLOGY

#### 3.0 CANTONMENT AREA AND LIBBY ARMY AIRFIELD

The topography of the cantonment area is relatively level and gently sloping in a northeast direction from approximately 5000 ft above mean sea level (MSL) along the southwestern boundary to under 4600 ft above MSL along the northern boundary of LAAF. Soils within the cantonment area are predominately Terrarossa complex with 0-45% slope and White House complex with 1-30% slope (USDA 2002).

#### 3.1 TRAINING AREA INDIA

The proposed site is located on a relatively level, north-south trending plateau at approximately 4850 ft above MSL. Soil at the site is Terrarossa-Blacktail-Pyeatt complex with 1-40% slope (USDA 2002).

#### 3.2 TRAINING AREA JULIET

The proposed site is located on a relatively level, north-south trending plateau at approximately 4800 ft above MSL. Soil at the site is White House complex with 1-30% slope (USDA, 2002).

#### 3.3 TRAINING AREA LIMA

The proposed site is relatively level at approximately 5000 ft above MSL. Soil at the site is Terrarossa-Blacktail-Pyeatt complex with 1-40% slope (USDA 2002).

#### 3.4 TRAINING AREA PAPA

The proposed site is located in the foothills of the Huachuca Mountains at an elevation of approximately 5300 ft above MSL. The site is located on a southeast facing slope with gentle to moderate sloping hillsides to the immediate north, west, and south. Soil at the site is Gardencan-Lanque complex with 0-5% slopes (USDA 2002).

#### 3.5 TRAINING AREA VICTOR

The proposed site is relatively level at approximately 4800 ft above MSL. Soil at the site is Gardencan-Lanque complex with 0-5% slopes (USDA 2002).

#### 3.6 MOUNTED REACTION COURSE TRAINING ROUTE

The 3.75-mile route extends from an elevation of 4975 ft above MSL down to 4750 ft above MSL in a north-east sloping direction. The route has varied topographic conditions ranging from level, gently sloping grasslands down through stream crossings and back up to the grassland plateau. Soil at the site is predominately Terrarossa-Blacktail-Pyeatt complex with 1-40% slope (USDA 2002). In the northern section of the course the soil is a mix of White House complex with 1-30% slope and Ubik complex with 0-3% slope (USDA 2002).

#### 3.7 SMALL ARMS FIRING RANGES ON THE SOUTH RANGE

Firing positions at the small arms firing ranges range vary between 4800 and 4900 ft above MSL with south and southwest range backdrops at higher elevations up to 6500 ft above MSL. Soils in the area of the firing points of the South Range are Terrarossa complex with 0-45% slope and Gardencan-Lanque complex with 0-5% slope.

## **4 HYDROLOGY AND WATER RESOURCES**

### **4.0 CANTONMENT AREA AND LIBBY ARMY AIRFIELD**

Various unnamed ephemeral streams extend through the cantonment area in a northeast direction. Most of these streams have improved crossings and are channelized throughout the majority of their extent in the developed areas. Huachuca Canyon Creek serves as the major storm water interceptor for Huachuca Canyon and the Fort's cantonment area.

### **4.1 TRAINING AREA INDIA**

No surface water resources occur within or adjacent to the site boundary.

### **4.2 TRAINING AREA JULIET**

No surface water resources occur within or adjacent to the site boundary. Sycamore Pond and an unnamed ephemeral stream are located in a valley bottom approximately 0.25 miles to the west of the plateau.

### **4.3 TRAINING AREA LIMA**

No major surface water resources occur within the boundaries of the proposed site. A narrow, discontinuous and unnamed ephemeral drainage extends from the southwest corner of the area disappearing into grassland approximately 50 feet into the site.

### **4.4 TRAINING AREA PAPA**

Areas of severe erosion have caused gulying along the southern end of the site and along the unpaved roadways extending down slope from an existing fire break in the Huachuca Mountains. Storm water flows from higher elevations in the Huachuca Mountain foothills are concentrated into a small, unnamed ephemeral stream channel extending through the center of the site flowing in a northeast direction.

### **4.5 TRAINING AREA VICTOR**

No surface water resources occur within the boundaries of the site. A small unnamed ephemeral stream runs along the southern boundary of the site extending in an east-northeast direction.

### **4.6 MOUNTED REACTION COURSE TRAINING ROUTE**

The 3.75 mile road crosses through Blacktail Wash (an ephemeral stream) at several locations along the route.

### **4.7 SMALL ARMS FIRING RANGES ON THE SOUTH RANGE**

No surface water resources occur within the small arms firing ranges.

## 5 BIOLOGICAL RESOURCES

### 5.0 VEGETATION

Based on plant community mapping on Fort Huachuca, most of the land potentially disturbed is in grassland habitat (52 acres, 83 percent) (Table 2). The remaining 11 acres is in Oak (*Quercus* sp.) Woodland. Short descriptions of the vegetation at each site based on brief surveys in September 2004 are provided below. Common plant species observed are given but the number of plant species actually occurring at these sites is much larger. For example, up to 60 species of plants were found in native grasslands on mesa tops and 130 species on oak savannah on the Audubon Research Ranch a few miles west of the Post (McLaughlin and Bowers 2000).

**Table 2 Number of acres of plant community types in sites to be affected by the Proposed Action at Fort Huachuca, Arizona**

Site	Plant community type				Total
	Open grasslands	Oak woodlands	Mesquite grass-savannah	Deciduous woodland	
Training Area India	20	0	0	0	20
Training Area Juliet	10	0	0	0	10
Training Area Lima	0	5 <sup>a</sup>	0	0	5
Training Area Papa	0	6	0	0	6
Training Area Victor	0	0	20	0 <sup>b</sup>	20
MRC Route	2	0	0	0	2
Total	32	11	20	0	63

<sup>a</sup> Vegetation map for Training Area Lima indicates that the project site is in grasslands. However, inspection on the ground indicates that site is in oak woodlands.

<sup>b</sup> Vegetation map for Training Area Victor indicates that some of the project site is in deciduous woodlands. However, inspection on the ground indicates that all is in mesquite grass-savannah.

### 5.1 WILDLIFE

Reptiles and Amphibians. Surveys for reptiles and amphibians have not taken place in grasslands on Fort Huachuca. Based on data collected by Morrison et al (1995) for the oak-juniper savannah, common species in the grasslands in the project areas are likely whiptails (*Cnemidophorus* spp.) and tree lizard (*Urosaurus ornatus*).

Birds – Game. Upland game birds that may occur in the area of the Training Areas Lima and Papa sites in oak woodlands include the mourning dove, Montezuma quail (*Cyrtonyx montezumae*), and Gould's wild turkey (*Meleagris gallapavo mexicana*) (USAGFH 2001b).

Birds – Bird Species of Conservation Concern. Fort Huachuca falls within the Sierra Madre Occidental (U.S. portion only) Bird Conservation Region (BCR Region 34) (USFWS 2002a). A total of 39 bird species of conservation concern are within this region and of these, 10 occur or could occur in the grasslands in the project area (Table 3).

**Table 3 Birds of Conservation Concern That Occur or Potentially Occur in Grasslands and Oak Woodlands on Fort Huachuca Based on Species in Bird Conservation Region 34 and Arizona PIF Bird Conservation Plan**

Species		Occurrence on Fort Huachuca
Common name	Scientific name	
Grasslands		
Botteri’s sparrow	<i>Aimophila botterii</i>	Breeding species on Fort Huachuca.
Rufous winged sparrow	<i>Aimophila carpalis</i>	Likely does not occur on or in the area of Fort Huachuca.
Cassin’s sparrow	<i>Aimophila cassinii</i>	Breeding species on Fort Huachuca.
Baird’s sparrow	<i>Ammodramus bairdii</i>	Occurs on Fort Huachuca during the winter.
Grasshopper sparrow	<i>Ammodramus savannarum</i>	The <i>perpallidus</i> subspecies occurs during the winter and <i>ammolegus</i> subspecies occurs during the breeding season.
Ferruginous hawk	<i>Buteo regalis</i>	Likely occurs on Fort Huachuca during the winter.
Lark bunting	<i>Calamospiza melanocorys</i>	Likely occurs on Fort Huachuca during the winter.
Chestnut-collared longspur	<i>Calcarius ornatus</i>	Likely occurs on Fort Huachuca during the winter.
Mountain plover	<i>Charadrius montanus</i>	Not known to occur on or in the area of Fort Huachuca.
Aplomado falcon	<i>Falco femoralis septentrionalis</i>	Not known to occur on or in the area of Fort Huachuca.
Oak woodlands		
Buff-breasted flycatcher	<i>Empidonax fulvifrons</i>	Breeding species on Fort Huachuca. Not likely to occur in areas of Training Area Lima and Papa sites.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Year-round resident on Fort Huachuca. No records of its occurring at or near the Training Area Papa site.
Eastern (Azure) bluebird	<i>Sialia sialis fulva</i>	Year-round resident of the Huachuca Mountains and Fort Huachuca. Could occur in oak woodlands in area of Training Areas Lima and Papa sites.
Montezume quail	<i>Cyrtonyx montezumae</i>	Year-round resident on Fort Huachuca. Could occur in oak woodlands in area of Training Areas Lima and Papa sites.
Band-tailed pigeon	<i>Columba fasciata</i>	May be year-round resident on Fort Huachuca. Could occur at and in area of Training Area Lima and Training Area Papa.

Source: Latta et al 1999, USAIC, FH 2001, USFWS 2002a.

Based on this information, grassland bird species of conservation concern that could occur at the grasslands project sites are the Botteri's, grasshopper, and Cassin's (*Aimophila cassinii*) sparrows. Wintering species of conservation concern that could occur in these grasslands include Baird's sparrow (*Ammodramus bairdii*), ferruginous hawk (*Buteo regalis*), lark bunting (*Calamospiza melanocorys*), and Chestnut collared long-spur (*Calcarius ornatus*). Birds of conservation concern that have the potential to occur at or near the two sites in oak woodland include the eastern bluebird (*Sialia sialis fulva*) and Montezuma quail and band-tailed pigeon (*Columba fasciata*).

**Mammals.** Mule deer (*Odocoileus hemionus eremicus*) or their sign was observed at all sites surveyed. A possible black bear (*Ursus americanus*) track was seen at the Training Area Papa site. Other large mammals that occur in grasslands are the pronghorn antelope (*Antilocapra americana*) and javelina (*Pecari tajacu*) while the javalina would also be expected to occur in the oak woodlands.

## 5.2 SPECIAL-STATUS SPECIES

The Training Area Papa site is in the former Mexican spotted owl critical habitat and is an estimated 0.8 mile from the nearest protective activity center (PAC). The Training Area Lima site was not in the former critical habitat and is approximately 2.2 miles (3.5 km) from the nearest PAC. Important Mexican spotted owl habitat features as described in the critical habitat ruling are used here to evaluate the potential for habitat at the Training Area Lima and Training Area Papa sites to support owls even though there is no critical habitat on Fort Huachuca. The most important habitat for this species is protected habitat which includes the PACs and all mixed-conifer or pine-oak forest types with slopes of greater than 40 percent where timber harvest has not taken place for at least 20 years (USFWS 2004b). The two project sites are clearly not in protected habitat. Restricted habitat provides foraging habitat and includes other areas of mixed conifer and pine-oak forest not in the protected habitat. The pine-oak type is dominated by netleaf oak (*Quercus rugosa*), silverleaf oak (*Q. hypoleucoides*), ponderosa pine (*Pinus ponderosa*), and Apache pine (*P. engelmannii*) (Miller et al 2003). The Training Area Lima and Training Area Papa project sites are dominated by Emory and Arizona white oak and juniper are the encinal evergreen oak woodlands (Miller et al 2003) and, thus, are not part of the Mexican spotted owl restricted habitat. There are no records of the Mexican spotted owl at and in the area of the two project sites, although these areas can be considered potential habitat for this species (Hessil 2004). There would be a slight chance that a Mexican spotted owl would occur at or in the area of the Training Area Lima and Training Area Papa sites and this would most likely be foraging or dispersing individuals.

## 5.3 SPECIES OF CONCERN

Huachuca Golden Aster. Based on the known occurring elevations, this species would have the potential to occur at all the project sites.

Desert Massasauga. The elevation data indicates the desert massasauga occurs primarily in the lower slopes of the Huachuca Mountains on Fort Huachuca indicating it could occur in project sites dominated by grasslands.

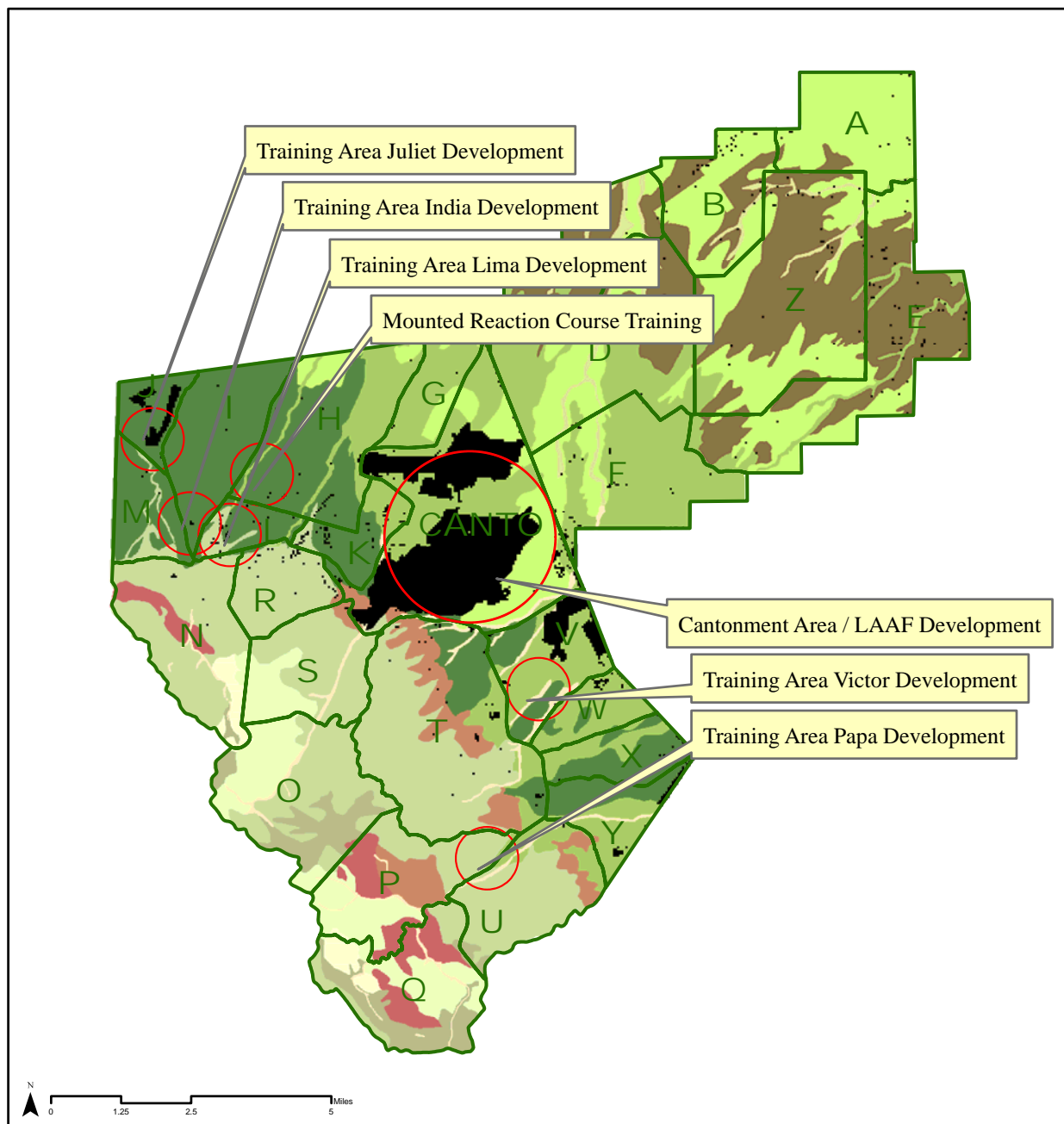
Arizona Ridge-nosed Rattlesnake. This species would have a slight potential to occur on and in the area of Training Area Papa.

Mexican Long-tongued Bat. Foraging habitat for this species would occur at the Training Area India and MRC Route project sites because agave are available for foraging.

Yellow-nosed Cotton Rat. This species could occur within or near the project features but the probability of this may be slight given its use of rocky slopes.

## 5.4 TRAINING AREA INDIA

The proposed site development area in Training Area India covers 20 acres of open grassland habitat (see Figure B-1; Photograph 1, Section 10). Land had been disturbed around a building and there were areas of bare ground on the northern one-half of the site indicating possible past disturbance. Lovegrass (*Eragrostis* sp.) was the most common grass species observed. Other grass species observed were sideoats gramma (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), and cane bluestem (*Bothriochloa barbinodis*). Low-growing acacia (*Acacia* sp.) was common in some areas and mimosa (*Mimosa grahamii*) was also seen. Mesquite (*Prosopis velutina*) was widely scattered as well as desert broom (*Baccharis serotoides*), prickly pear cactus (*Opuntia* sp.), and cane cholla (*Opuntia spinosior*). Sotol (*Dasylirion wheeleri*) was generally widely scattered but was more common on slopes above drainages adjacent to the site. Palmer agave (*Agave palmeri*) was widely scattered throughout this area and, as seen for sotol, was more common on slopes of drainages adjacent to the site (Photograph 2, Section 10). The higher density stands of agave are mostly outside the site boundary.



## Legend

<span style="border: 1px solid red; border-radius: 50%; padding: 2px;"> </span>	Generalized Development Locations	<span style="display: inline-block; width: 15px; height: 10px; background-color: #C85130; border: 1px solid black;"></span>	Oak-Grass Savanna
<span style="border: 2px solid green; padding: 2px;"> </span>	Training Areas	<span style="display: inline-block; width: 15px; height: 10px; background-color: #38761D; border: 1px solid black;"></span>	Open Grassland
<span style="display: inline-block; width: 15px; height: 10px; background-color: #F7D990; border: 1px solid black;"></span>	Deciduous Woodland	<span style="display: inline-block; width: 15px; height: 10px; background-color: #A8C890; border: 1px solid black;"></span>	Pine Woodland
<span style="display: inline-block; width: 15px; height: 10px; background-color: #C83838; border: 1px solid black;"></span>	Mahogany Woodland	<span style="display: inline-block; width: 15px; height: 10px; background-color: #F7E790; border: 1px solid black;"></span>	Pinyon-Juniper Woodland
<span style="display: inline-block; width: 15px; height: 10px; background-color: #D9C880; border: 1px solid black;"></span>	Mesquite Woodland	<span style="display: inline-block; width: 15px; height: 10px; background-color: #90E790; border: 1px solid black;"></span>	Shrub-Grassland
<span style="display: inline-block; width: 15px; height: 10px; background-color: #80C880; border: 1px solid black;"></span>	Mesquite-Grass Savanna	<span style="display: inline-block; width: 15px; height: 10px; background-color: #805130; border: 1px solid black;"></span>	Shrubland
<span style="display: inline-block; width: 15px; height: 10px; background-color: #E7F790; border: 1px solid black;"></span>	Mixed Woodland	<span style="display: inline-block; width: 15px; height: 10px; background-color: black; border: 1px solid black;"></span>	Urban and Built-Up Land
<span style="display: inline-block; width: 15px; height: 10px; background-color: #A8D9A8; border: 1px solid black;"></span>	Oak Woodland		

**Figure B-1**

## Fort Huachuca Vegetation, 2000

## 5.5 TRAINING AREA JULIET

The proposed site development area in Training Area Juliet covers 10 acres of open grassland habitat and bare ground (see Figure B-1; Photographs 3 and 4, Section 10). Love grass was the most common grass species observed. Other species of grass included side-oats grama, cane bluestem, and other species. Widely scattered acacia, desert broom, palmer agave, sotol, and mesquite were in evidence.

## 5.6 TRAINING AREA LIMA

The proposed site development area in Training Area Lima covers 5 acres of open grassland habitat according to the Fort Huachuca vegetation map (see Figure B-1). However, it is next to the oak woodland habitat and there are oaks (*Quercus emoryi*) on this site (Photograph 5, Section 10). Therefore, it is listed as oak woodland for this EA. The land around the existing building particularly to the west has been disturbed and there are relatively large areas of bare ground here (Photograph 6, Section 10). The remainder of this site may also have been previously disturbed because there are smaller areas of bare ground throughout. Lovegrass is very common here while species such as sideoats grama and cane bluestem are much less common. A few desert broom and small junipers occur in this site. Trees were mapped on this site and 32 oak trees and 5 mesquites were counted.

## 5.7 TRAINING AREA PAPA

The proposed site development area in Training Area Papa covers 6 acres of open oak woodlands in two areas (see Figure B-1; Photograph 7, Section 10). Evidence of past disturbance in this area consists of vegetated mounds of dirt (Photograph 8, Section 10). The oak woodlands are open with relatively large open grassy areas. Lovegrass is found mostly in disturbed land along the dirt road through the site and is uncommon in the rest of the area. Sideoats grama, three awn (*Aristida* sp.), and cane bluestem were common. Arizona cottontop (*Digitaria californica*) and blue grama were also noted. Herbaceous species in bloom included cudweed (*Gnaphalium* sp.), jimsonweed (*Datura wrightii*), prairie sunflower (*Helianthus petiolaris*), and telegraphweed (*Heterotheca grandiflora*). Emoryi oak as well as Arizona white oak (*Quercus arizonica*), and alligator juniper (*Juniperus deppeana*) were the common trees here. Understory species included acacia and pointleaf manzanita (*Arctostaphylos pungens*). Trees were mapped on this site and 16 individual oaks and 7 oak clumps were tallied. In addition, 14 junipers and one mesquite were mapped.

## 5.8 TRAINING AREA VICTOR

The proposed site development area in Training Area Victor covers 20 acres and most is in the mesquite-grass savannah habitat (see Figure B-1; Photograph 9, Section 10). The plant community here is similar to the open grasslands discussed above. Lovegrass was the most common species observed while sideoats grama, cane bluestem and other species were less common. Herbaceous species in bloom included buckwheat (*Eriogonum* sp.), common ragweed (*Ambrosia* sp.), cudweed, jimsonweed, prairie sunflower and pepper grass (probably *Lepidium densiflorum*). One stand of giant reed (*Arundo donax*) was also observed (Photograph 10, Section 10). Shrubs and small trees were very widely scattered at this site and included desert broom, mesquite, and one desert willow (*Chilopsis linearis*). Based on the vegetation map, a small part of site is in the deciduous woodland. This woodlands is associated with a wash and the only trees were a few widely scattered mostly dead cottonwoods (*Populus fremontii*) (Photograph 11, Section 10). Species such as mule fat (*Baccharis salicifolia*) and Johnson grass (*Sorghum halepense*) were seen here. The riparian vegetation does not extend out of the wash in the area. Given that there will be a buffer zone between the wash and development on the site, it does not appear that deciduous woodlands would be affected which means that all 20 acres of this site is in mesquite-grass savannah.

## 5.9 MOUNTED REACTION COURSE

The MRC follows existing dirt roads through open grassland habitat for 3.75 miles (see Figure B-1; Photograph 12, Section 10). The road would not be widened but small areas of grasslands would be

1 affected by the construction of pullouts and other project features. As is the case at other sites in open  
2 grasslands, lovegrass was the most common species observed while sideoats grama, blue grama, cane  
3 bluestem, and other species were observed. Widely scattered mesquite, sotol, and Palmer agave were seen  
4 throughout (Photograph 13, Section 10). The agave had a distinct clumped distribution along the route.  
5 Other species observed included banana yucca (*Yucca baccata*) (at only one location), cane cholla,  
6 juniper, and prickly pear cactus. A few Emory oaks were associated with drainages through the area. The  
7 MRC passed through 11 dry drainage channels. The habitat in these areas was essentially all open  
8 grasslands except where oak trees were encountered (Photograph 14, Section 10).

## 9 **6 HISTORICAL AND CULTURAL RESOURCES**

10 Site specific surveys were conducted in Training Areas India, Juliet, Lima, Papa, and Victor and along the  
11 MRC during October 2004.

### 12 **6.0 TRAINING AREA INDIA**

13 No artifacts were recorded during the survey.

### 14 **6.1 TRAINING AREA JULIET**

15 No artifacts were recorded during the survey.

### 16 **6.2 TRAINING AREA LIMA**

17 The survey recorded two historic structures whose function could not be determined, but their  
18 construction and materials are consistent with other WPA structures on the installation.

### 19 **6.3 TRAINING AREA PAPA**

20 An isolated occurrence of a 20<sup>th</sup> century brown glass bottle base was found on the eastern portion of the  
21 site. One 20<sup>th</sup> century canned milk can was found on the western portion of the site.

### 22 **6.4 TRAINING AREA VICTOR**

23 One isolated non-diagnostic potsherd was found during the survey. No other artifacts were discovered in  
24 its immediate area. Small piles of 20<sup>th</sup> century glass and trash were noted, but no structures or features  
25 were associated with them. One green glass marble and one isolated flake were also recorded. Two large  
26 rock features were recorded. One was a simple linear feature of large rocks whose function could not be  
27 determined. The other was a series of linear features that originally spelled out "USMC". The "U" has  
28 since been damaged.

### 29 **6.5 MOUNTED REACTION COURSE**

30 No diagnostic artifacts were recovered. Isolated occurrences included a unofficially worked rhyolite core  
31 and one tested rhyolite cobble.

## 32 **7 TRANSPORTATION AND CIRCULATION**

### 33 **7.0 CANTONMENT AREA AND LIBBY ARMY AIRFIELD**

34 The majority of paved streets occur within the cantonment area on the Fort. The transportation network  
35 within the cantonment area includes primary and secondary collector streets and residential streets. On-  
36 post primary collector streets include Hatfield Street, Irwin Street, Allison Road, Whitside Road, Brainard  
37 Road, Winrow Road between the Main Gate and Allison Road, and Smith Avenue between Hatfield  
38 Street and Whitside Road. Secondary collector streets on the Fort include Cushing Street, Arizona Street,  
39 Squire Avenue, Smith Avenue east of Hatfield Street, Hines Road, Windrow Road west of Allison Street,  
40 and Carter Street south of Hatfield Street. The remaining streets within the cantonment area are

considered residential streets (USAGFH 2000b). Traffic regulations for the cantonment area at Fort Huachuca are specified in the Motor Vehicle Traffic Code, Fort Huachuca Regulation 190-5 (USAIC, FH 2003a).

#### **7.1 TRAINING AREA INDIA**

Training Area India site is currently accessed primarily via paved roads with a short unpaved road leading into the site. The short unpaved road would be paved as part of the Proposed Action.

#### **7.2 TRAINING AREA JULIET**

The proposed improvement within Training Area Juliet is accessible via existing paved roads.

#### **7.3 TRAINING AREA LIMA**

Training Area Lima site is located north of Canelo Road (paved road) and accessed via unpaved roads.

#### **7.4 TRAINING AREA PAPA**

Training Area Papa site is accessed via Garden Canyon Road (paved) and an unpaved road.

#### **7.5 TRAINING AREA VICTOR**

Training Area Victor site is accessed via a paved road south from the cantonment area and subsequently a series of unpaved roads.

#### **7.6 MOUNTED REACTION COURSE**

The testing and training component of the Proposed Action would include converting an existing loop of unpaved roads into a MRC. The site is located within Training Areas Hotel and Lima and would be accessible via unpaved roads.

#### **7.7 SMALL ARMS FIRING RANGES ON THE SOUTH RANGE**

The small arms and weapons fire ranges on the South Range would also be refurbished under the Proposed Action. The proposed modifications would include road improvements. These sites are located south of the cantonment area and most are accessed via Garden Canyon Road (paved).

#### **7.8 EAST RANGE TRAINING**

Under the Proposed Action, increased east range company-level cadre training would occur within Training Areas Alpha, Bravo, Delta, and Foxtrot. Access to these training areas is along exiting paved and unpaved roads.

### **8 HAZARDOUS WASTE, SUBSTANCES, AND MATERIALS**

#### **8.0 CANTONMENT AREA AND LIBBY ARMY AIRFIELD**

The exact location of proposed development is unknown. Due to the level of existing development in this area it is assumed that hazardous materials are used or stored in the cantonment area and on LAAF.

#### **8.1 TRAINING AREA INDIA**

There are no known hazardous materials stored or used at the proposed site location.

#### **8.2 TRAINING AREA JULIET**

The existing Black Tower complex is a POL use location. There is a hazardous materials storage area in the southwest area of the complex. Two 3,000 gallon above-ground storage tanks (AST) that contain

propane are located in the southeast corner of the complex (USAGFH 2003). North of the Black Tower complex is an existing bunker that was used to store munitions in the past.

### **8.3 TRAINING AREA LIMA**

Adjacent to the proposed site is an existing facility that has a 250 gallon AST that contains propane (USAGFH 2003).

### **8.4 TRAINING AREA PAPA**

There are no known hazardous materials stored or used at the proposed site location.

### **8.5 TRAINING AREA VICTOR**

There is an asbestos containment area on the west side of the access road to the proposed site. This area is fenced and marked with signage.

### **8.6 MOUNTED REACTION COURSE TRAINING**

There are no known hazardous materials stored or used at the proposed site location.

## **9 UTILITIES AND SERVICES**

### **9.0 CANTONMENT AREA AND LIBBY ARMY AIRFIELD**

The exact location of proposed development is unknown. All utilities are widely available in the cantonment area and at LAAF.

### **9.1 TRAINING AREA INDIA**

Water, sewer, telephone, and other cable utilities exist adjacent to the site. Overhead power lines occur adjacent to the site.

### **9.2 TRAINING AREA JULIET**

Water, sewer, telephone, and other cable utilities exist adjacent to site via buried lines along the edge of the main roadway. Overhead power lines occur on site.

### **9.3 TRAINING AREA LIMA**

Water and telephone occur adjacent to the site via buried lines. Power occurs adjacent to the site via overhead lines. Potable toilets exist on site.

### **9.4 TRAINING AREA PAPA**

No existing utilities occur on or immediately adjacent to site.

### **9.5 TRAINING AREA VICTOR**

No existing utilities occur on or immediately adjacent to site.

### **9.6 MOUNTED REACTION COURSE TRAINING**

Telephone and other cable utility lines are buried adjacent to the existing roadway in some parts of the proposed course, mostly on the western side. Overhead power lines border and cross the existing roadway in the southern portion of the course.



Photograph 1. Open grasslands at the Training Area India site.



Photograph 2. Dense agave stand adjacent to eastern boundary of the Training Area India site.



Photograph 3. Grasslands with scattered agave at the Training Area Juliet site.



Photograph 4. Bare ground at the Training Area Juliet site.



Photograph 5. Open oak woodlands at the Training Area Lima site.



Photograph 6. Bare ground at the Training Area Lima site.



Photograph 7. Open oak woodlands at the Training Area Papa site.



Photograph 8. Vegetated mound at the Training Area Papa site.



Photograph 9. Open mesquite-grass savannah at the Training Area Victor site.



Photograph 10. Stand of giant reeds at the Training Area Victor site.



Photograph 11. Wash near southern boundary of the Training Area Victor site.



Photograph 12. Open grasslands along the MRC.



Photograph 13. Scattered agave along the MRC.



Photograph 14. Oak trees along drainage along the MRC.